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Boston Society of Natural History.

FROM

The Association

Received Mar. 24, 1902 - Aug. 28, 1905.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF
STATEN ISLAND.

VOLUME V.

November 9th, 1895, to October 10th, 1896.

EDITED BY ARTHUR HOLLICK, SECRETARY.

The price of this volume is \$2.50. Single numbers 10 cents each, except Special No. 21 (Staten Island Names, Ye Olde Names and Nicknames), the price of which is 50 cents. Volumes i., ii., iii. and iv. may be obtained at \$2.50 each.

NEW BRIGHTON, N. Y.
1896.

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PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. No. I.

Nov. 9th, 1895.

Fifteenth annual meeting, held at the residence of Mr. Walter C. Kerr, Central avenue, New Brighton. The President in the chair.

Reports of officers for the past year were read and approved, viz :

Secretary :

Number of members on roll at date of last annual report.....	57
Since elected.....	23
Resigned.....	2
Deceased.....	1
On roll at date.....	77

The secretary also reported that an index to Vol. iv of the Proceedings had been prepared and would be ready for distribution by the date of the next meeting.

Treasurer :

Receipts, including balance from last year.	\$448.30
Disbursements.....	237 36
Balance on hand.....	\$210 94

Curator :

Number of additions to the collections	20
Classified as :	
Geology.....	4
Zoology.....	12
Archæology.....	1
Miscellaneous.....	3

In the library there have been seven additions to the exchange list; twenty-seven donations, consisting of 224 books and pamphlets; and 299 numbers of serials received in exchange for the Proceedings, including several back numbers for the completion of old volumes.

The election of officers for the ensuing year resulted as follows:—president, Walter C. Kerr; treasurer, Thomas Craig; secretary, Arthur Hollick; curator, H. Cleaver Brown; trustee, Wm. T. Davis.

On motion it was voted to hold the regular meetings of the Association, dur-

ing the ensuing year, on the second Saturday evening of each month, except July and August.

A proposition to change the name of the Association, so as to recognize more fully the historical side of its work, was referred to a committee for future report.

Mr. Louis L. Tribus, Clifton, was elected an active member.

Mr. Joseph C. Thompson exhibited specimens of the parasite, *Filaria immitis*, and read the following paper :

THE OCCURRENCE OF *Filaria immitis* IN THE HEART OF A STATEN ISLAND DOG.

My attention was first drawn to these intra-cardiac parasites while making an examination of a small Newfoundland dog, that died in the Physiological Department of the College of Physicians and Surgeons, when I came across two worms of the genus *Filaria*, one being situated in the cavity of the right auricle, the other at the junction of the two great nervous trunks just as they enter the heart. These worms were about one-sixteenth of an inch in diameter, and nine and eleven inches long respectively, the smaller coming from the heart. They were not attached, in any way, to the walls of these cavities.

The second time I found a similar condition existing, was in a fox terrier belonging to Mr. F. W. Kost, the well known artist of Clifton. Instead of being two, however, there were half a dozen ranging from three to seven inches long, all in the right auricle.

The genus *Filaria* belongs to the order of Nematodea or round worms. The characteristics of these worms are

a long filiform body, smooth or finely striated transversely, and a simple round or triangular mouth, which is generally surrounded by a variable number of papillae. The head is continuous with the body and they are viviparous.

The genus comprises over forty species, all of which are parasites at some period of their existence, on mammals, birds, reptiles, fishes or insects. In the warm blooded animals they reside chiefly in the lumen or walls of the alimentary tract, between the folds of the peritoneum, just underneath the skin, and some exist in the lung tissue. Several species are found in man, viz

F. medinensis, the "Guinea worm" of the old world tropics, the female of which only is known. It attains a length of from one to twelve feet, burrowing in the subcutaneous and cellular tissue between the muscles, where it occasions severe abscesses.

F. sanguinis hominis is found in the blood. In the day time they entirely disappear from this medium. Where they go to is not known, but they are believed to seek shelter in the spleen.

F. loa occurs in the conjunctiva and tear glands of the negroes along the Congo.

F. lentis oculi humanis, the embryo of which has been found in the capsule of the lens of the eye.

In just what manner all these parasites gain access to their host is still *sub-judice*

Pedtschenko has lately proved that the embryo migrate into a *Cyclops* and there undergo an ecdysis, or moulting. Whether they are then taken into the animal, or, in the case of man, who generally tries to drink non-cyclops containing water, they have made their escape and are in the free swimming state, is not known.

By some it is believed that they are introduced by the bite of the mosquito. To sustain this theory, they quote the fact that elephantiasis, a disease attributed to the presence in the blood of *Filaria sanguinis* is comparatively prevalent in China and Japan, while in Formosa, where there are no mosquitoes, elephantiasis is an un-

known malady among the natives.

From Schneider's monograph on the nematodes, one learns that the *Filaria* I present to your notice this evening is very abundant in Asia, in the right auricle of the dog, but he reports only four cases from North America. According to him they are only found on the right side of the heart, and in vessels which physiologically belong to that side of the organ, as the veins. In the two dogs I was so fortunate as to have a chance to examine, every blood vessel on both sides of the heart into which could be introduced the points of a pair of scissors, was laid open, and the worms were found only on the right side. Schneider goes on to say that the pathological action of the parasites is not well understood. In two of his cases, the dogs were very thin, very voracious and very active in their movements. The same symptoms were present in the Kost dog. For over a year before his death his activity was often a matter of comment, and his lankyness a matter of jest among us. He was a moderate eater.

The question which immediately presents itself to a physiologist is—why do these worms, living as they do for so long a time in the cavity of the heart, and in the blood stream, not act as a foreign body, or in other words, why do they not cause coagulation of the blood? After going over considerable literature, both English and German, on this subject, I have found no reference made to the above query. We know that if a needle is thrust into a blood vessel, there is promptly formed around it a little clot of fibrin, which, if the needle be left long enough will grow sufficiently large to plug up the vessel. That is because the needle is a foreign body. We know that the injection into an animal of certain albumose containing peptones, as snake venom, or various digestive ferments, as pepsin and trypsin, or an extract made from the secretory glands of the leech, will cause the blood of an animal to remain in a fluid condition a much longer time after death than it would normally.

I believe that these worms may secrete some substance, or in their excreta there may be some unknown material which acts on the blood of their host in the manner of a peptone. Peptones are distinct poisons. The emaciation and nervous temperament of these dogs lead one to think very strongly that they may be suffering from a low grade of poisoning, which would be the case if these worms were the cause, as I believe them to be, of small amounts of peptones, or one of their allies being regularly generated in their system day after day.

Mr. Ira K. Morris read the following account of

A RECENT FIND OF A HESSIAN MILITARY BUTTON.

While excavating on the Old Stone road, in Northfield, a few days since, Mr. Joseph Mersereau, county foreman of that department, found an ancient military button, near the approach to the Fresh Kill bridge. It evidently came from the uniform of a Hessian soldier during the Revolution, as troops of that nationality are known to have encamped in that locality. On the face of the button is a German eagle, perched on a cannon.

The road leading from St. Andrew's church, in Richmond, past the old British fort, to the old woolen mill, during the Revolution extended westward through the present farm of Mr. David Simonson, crossing the Old Stone road at a point about a quarter of a mile north of the approach to the Fresh Kill bridge. It made as nearly as possible a direct line to the (new) Blazing Star ferry, now known as Linoleumville, and was one of the earliest post roads in the country.

As near as I can ascertain that portion of the road lying between the old woolen mill and the Richmond turnpike was closed about sixty-five or seventy years ago.

The locality through which this road passed is level for quite a space, and is well calculated to accommodate a large body of troops held in reserve.

I have proof positive that a whole

brigade of Knyphausen's Hessians were encamped there during one of the winters of the war, consequently it is an easy matter to trace the ownership of the venerable button.

Mr. Morris also reported that he had secured the lock and one of the hinges from a cell door of the old red jail, at Richmond.

Mr. Arthur Hollick exhibited a specimen of Helderberg limestone, with the following memorandum:

FURTHER DISCOVERY OF DRIFT FOSSILS AT PRINCES BAY.

On a recent trip to the bluff at Princes Bay another boulder of Helderberg limestone was found, which contained, besides many common fossils such as we have already listed, a well preserved head of *Lichas pustulosus* Hall. This trilobite was recorded somewhat doubtfully last year, from fragmentary remains, by Mr. L. P. Gratacap, in an enumeration of drift fossils from the same locality. (Proc. Mch 10, 1894)

NOTES ON AUTUMNAL VEGETATION.

Mr. Walter C. Kerr reported having found a bush of *Leucothoe racemosa* Gray, destitute of leaves, but in full blossom, this autumn, near Watchogue.

Mr. Hollick reported blossoms on an apple tree at Egbertville, on October 19.

Mr. Morris reported an elm tree which had recently put forth a third crop of leaves this year—the first two having been totally destroyed by the elm beetle.

The President then delivered his annual address, as follows:

ANNUAL ADDRESS OF THE PRESIDENT,

The prosperity of this association has never been more assured than now, nor has its future development been more easily foreseen. The fourteenth year now closing shows an increase from fifty-seven to seventy-seven members, and a corresponding growth of interest as measured by the increased attendance at our meetings. Indeed the attendance quite taxes the facilities available at the homes of members and makes doubly welcome the

accommodation soon to be obtained in the new Academy building.

During the year the contributions to the Proceedings have covered the usual wide range of subjects, including the following :

A recent discovery of Indian remains at Tottenville; The snowy egret; Survival of storm—injured leaves; Two additions to the local list of dragon flies; Additions to the local flora, numbering 17 species; The old Moravian spring; Imitation "iron sand," pyrrhotite; Staten Island's first bank; Our water supply; Arsenic in wall papers and hangings; Notes on the destructiveness of wind and rain storms; The relative weight of rain and air; Indian relics at New Springville; Discovery of a cache of fish remains at Tottenville; Scarlet-margined luna moths; Further notes on the nesting of the barred owl on Staten Island; Notched leaflets in *Aralia*; A large lobster; A large turtle; Albino *Viola sagittata* Ait; Clay iron stone containing *Corbula*; A zone of vegetation on the perpendicular bluff at St. George; An unusual electrical display; A Staten Island tick as a painful human parasite.

In April last the Association printed a list of its members, with addresses, and in this connection it is pleasing to note that of the fourteen men who met fourteen years ago to organize the Association all are enrolled as members except one deceased and one who has moved to a distance.

It is not however, with records of the past we have chiefly to deal. We have a year of activity and opportunity before us and it may be well to outline what lies directly in our path. The most obvious matters requiring our consideration are : The shaping of plans of action regarding the park system project; The publication of the proposed volume of Contributions to the Natural History and Archæology of Staten Island; The removal of our museum and library to the new Academy building and properly arranging them in suitable cases.

The proposition formulated by this Association last June to establish a park system has met with public approval and

having arisen coincidently with a renewed and increasing interest in public improvement is in a fair way to steadily progress to reality. By joining our efforts with those of other organizations we can broaden the favor which the project has already received. By making your president the chairman of the committee on public improvements the Chamber of Commerce has placed its seal of approval upon the park system plan and the time is now nearly ripe for our committee to regard the generalities of preliminary work finished and the opportunity for the consideration of specific methods of procedure at hand.

The publication of our natural history and archæology would do more to place this Association in the position it deserves, through the work it has done, than any other act it could perform. It is not sufficient to merely enjoy a general prosperity in numbers and attendance at our meetings, nor yet to rest content with having collected freely from our natural resources. We must produce the visible and tangible evidence of such labor in proper form for distribution. With the manuscript ready, and much of it quite old and well checked, we should make especial effort to seek the means for its publication in such completeness and style as will, by its scientific standing, reflect credit alike upon those who have labored to produce it and others through whose generosity it may be issued. A fund sufficient to guarantee the cost of publication is necessary and this opens a field of opportunity to those who have an appreciation of such accomplishments.

The Staten Island Academy, which becomes our new home, is now well under way and will be ready for occupancy by May next. The room designated for our museum is fourteen by nineteen feet and has about forty-four lineal feet of available wall space for cases. It is adjacent to a lecture room nineteen feet by thirty-two in which our meetings will be held. Chemical and physical laboratories are at hand and with the convenience of stereopticons and other apparatus our opportunities for holding instructive

meetings will be much enhanced. Above all our library and museum will become accessible. To this end it will be necessary to make considerable expenditure for cases, and the various attendant expenses of arranging specimens. The labor will be freely furnished by members, but we must raise several hundred dollars to provide safe, convenient and attractive settings for our possessions. With the funds now on hand and the dues of the ensuing year, this can doubtless be accomplished and our running expenses also be met. To permit this, however, we must not use our funds for other purposes.

When established in the Academy we should keep up our library by annually binding our exchanges and periodicals; we should mount good specimens of native birds and animals and preserve others in alcohol. In many ways we will find it expedient to increase our annual expenses. The publication of our Proceedings has cost more each year and our list of exchanges constantly increases.

All this leads to the suggestion of the propriety of increasing our annual dues from three dollars to five, especially as this will be more than warranted by the additional facilities which the Association will afford, though it may be well to delay such action until another year. While so small an increase might at a glance seem so insignificant a matter as to be adopted without consideration it is well to remember that a scientific association is always in danger of allowing business considerations to usurp more important functions and is never so safe as when it needs pay little attention to its finances, yet is in constant receipt of just sufficient to come to comfortably meet its requirements. Our dues should therefore be as small as possible and no desirable person should be outside of our ranks by reason of the expense attaching to membership.

In the conduction of our monthly meetings there may be opportunity to heighten the interest without detracting from our main objects. Primarily our efforts are focused upon the discovery and recording of the natural resources of our Island, also its archæology and history. Those most

interested in and who have opportunity for such investigations will always furnish the material which chiefly gives character to our discussions and publications. We, however, have many members who are skilled in other lines and from whom talks upon their familiar subjects would be of general interest. Recent advances in chemistry, engineering, medicine, bacteriology, astronomy, horticulture and other branches could be commented upon and discussed. Aside from the useful information thus disseminated, interest is aroused in scientific matters leading to active participation in the affairs of the Association by members who otherwise would be non-interested but useful supporters of the organization. New members would be attracted by such exercises from the many who have scientific inclinations but who perhaps stand in unwarranted awe of the terms in which scientific proceedings are couched when prepared for publication. It is well known that the popularly interested layman finds his fears dispelled when, under pleasant surroundings, he comes in personal contact with the affairs of science. He finds that there are no mysterious symbols and quite a dearth of scientific terms; in fact the language of science, except for systematic publication, is quite as clear and simple as the other.

It has frequently been suggested that we have a microscopical evening once each year and no suggestion could be more easily acted upon. Much interest would attach to an exhibition of slides under our instruments, and later, with the facilities offered by the Academy building, the exhibit could be made open to the public.

We should not attempt more than we can do well. Our course should be guided along natural lines. From time to time various opportunities will arise to afford interesting and instructive entertainment. We should be quick to grasp the opportunities rather than labor to force interest from monotony of conventionality, even though it be quite proper and scientific conventionality.

We are a purely local association and we need not depart from our fundamen-

tal reason for existence through opening our gates to whatever serves to incline those with scientific tendencies to find pleasure in our meetings.

In the recent rapid growth of our membership it may be noted that our chief acquisitions have been among men of mature years. We should make especial effort to lead the youth, even boys, into our ranks. The average age of our members is not suggestive of companionship to the lads of our community, but if those whose tastes incline are invited, or suggestions are made to their parents, we may augment our numbers by those who would receive the greatest benefit from the wholesome associations which surround the companionship of science.

In conclusion, we are but a small local organization, yet one of the largest of its kind, outside of the large cities, in the country. We have an unbroken record of fourteen years of monthly meetings and twelve of publications. We have accomplished something. We have much more to do. Our opportunities are apparent and arrange themselves in natural and comparatively easy lines before our eyes. We are prosperous. We have no dissensions to smooth over or difficulties to solve. We need only to proceed along the path we have already traveled and by reason of having trodden it so long utilize our experience to do it better and gather more than our past observation has permitted us to discern,

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. V. No. 2.

DEC. 14th, 1895.

Meeting held at the residence of Dr. C. W. Townsend, New Brighton.

The President in the chair.

Messrs. John Duer Irving, New Brighton; David M. Fackler, New Brighton, and Theo. H. McNamee, Clifton, were elected active members.

Dr. C. W. Townsend exhibited diphtheria bacilli under the microscope, together with a vial of diphtheria antitoxin and read the following paper:

A TALK ON ANTITOXIN.

The great mortality of diphtheria has ever been an incentive to scientific men to produce some remedy which would render this disease less fatal to the human race.

To Klebs of Zurich is due the credit of having first discovered the bacillus of diphtheria, but Loeffler was the first to show that diphtheria could be produced in animals by the inoculation of a pure culture of the Klebs bacillus, hence the specific micro-organism of diphtheria generally goes by the name of the Klebs-Loeffler bacillus. The bacillus of diphtheria is a straight, or slightly curved rod, $1\frac{1}{2}$ to 3 micro-millimeters in length, and from 0.5 to 0.8 m. m. in width. It is present in all true cases of diphtheria, though in severe cases it is often associated with *Strepto*-, *Diplo*-, and *Staphylococci*.

The history of the treatment of infectious diseases by the introduction into the body of some substance which is capable of antagonizing their specific poisonous effects, is of great interest. Jenner, by his method of vaccination as a preventive of smallpox, foreshadowed the use of antitoxin as a cure for diphtheria. Pasteur by his researches

upon ferments paved the way over which many brilliant minds have followed. Metchnikoff's study of the action of the cells of the body brought to light the part played by the phagocytes, whose action in relation to diphtheria and antitoxin we will touch on later.

Pasteur, however, was the first to make therapeutic use of his and others' discoveries. In 1880 he showed that by inoculating fowls with the attenuated virus of chicken cholera he could render them immune to that disease. Shortly afterwards he extended his discoveries, by the application of his methods, to the cure of anthrax and hydrophobia.

The names of Behring, Roux and Aronson are, however, more closely associated with the subject of this paper than are those of their eminent predecessors. Since 1890, when antitoxin was first discovered, they and other scientists have been steadily perfecting this new remedy and it has now been several years in use all over the world. In a few words I will give you its method of preparation. A bouillon culture of very virulent Klebs-Loeffler bacilli is added to a 2 per cent. alkaline sterilized bouillon medium, contained in a 2 litre flask. The flask is connected by a lateral tube with a wash bottle, containing water, by means of which moistened and filtered air is passed over the culture in the flask. The culture is allowed to grow for 3 or 4 weeks when it is then filtered carefully and the result is a clear bacillus-free solution of diphtheria toxin, whose strength can be determined on guinea pigs. This solution is then used on a healthy young horse—from $\frac{1}{4}$ to 1 cubic centimeter being the usual injection.

The horse develops in consequence a fever, which passes off in the course of a day or so. After 3 days he is reinjected with an increased quantity. This is continued and about 15 c. c. is given him in the next two weeks. After about a month of this treatment the horse is receiving from 30 to 40 c. c. three times a week. This is kept up until, after about ten or twelve weeks of hypodermic injections of toxin, the horse is considered immune. With strict antiseptic precautions a canula is introduced into the horse's jugular vein, and from 5 to 15 litres of blood is allowed to flow into sterilized flasks which are kept cool till coagulation sets in. The serum is then removed into sterilized vessels into which a small piece of camphor has been placed as a preservative. The vessels are then sealed. The antitoxin is tested and its strength spoken of in units. An antitoxin normal unit is 10 times the amount required to protect from death a guinea pig weighing 250 grammes, when ten times the fatal dose of diphtheria toxin is mixed with the serum, both being injected simultaneously.

There are three strengths in use. They are dispensed in bottles containing about 10 grammes:

No. 1	strength,	600	normal	units,
No. 2	"	1000	"	"
No. 3	"	1500	"	"

No. 1 is suitable in mild cases in children. Nos. 2 and 3 in adults and severe cases in children. Antitoxin is used in two ways: Either to prevent or cure the disease. If a child for instance has been exposed to the disease we inject small quantities of Nos. 1 and 2, and in institutions where diphtheria has broken out it has been of much value in preventing its spread. As a curative agent, where diphtheria has already set in, we inject once or more often as the case demands.

Of the mode of action of antitoxin we are not certain, but the generally accepted hypothesis of its action, and the one that appeals to my reason and experience, is that it acts as a cell stimulant, urging the phagocytes to an increased action, in limiting the spread

of the disease and combating the poisons produced by it. To be used effectively it must be used early in the disease, the amount and strength of the serum to be determined by each case. Observers are not, however, unanimous in praise of antitoxin and years of careful use must pass before its exact value can be stated. This, however, can be said, that in the hands of many it has given favorable results and has been the apparent means of saving many little ones to us.

Mr. Wm. T. Davis transmitted three old pamphlets, relating to the Quarantine and its destruction in 1858, accompanied by the following memoranda:

LITERATURE RELATING TO THE QUARANTINE AND THE DESTRUCTION OF THE HOSPITALS IN 1858.

Mr. Wm. Olliff has presented the following pamphlets to the Association:

"Argument of William Henry Anthon, in Behalf of the Defendants Messrs. Ray Tompkins, and John C. Thompson, on Motion to Discharge from Arrest on a Charge of Arson, Arising from the Destruction of the Quarantine Hospitals, Before Judge Metcalfe, Thursday, October 7th, 1858. New York, Wm. C. Bryant & Co., Printers, 41 Nassau Street corner of Liberty, 1858."

"Facts and Documents Bearing upon the Legal and Moral Questions Connected with the Recent Destruction of the Quarantine Buildings, on Staten Island. By the Executive Committee of Staten Island. New York, Wm. C. Bryant & Co., Printers, 41 Nassau St. Cor. Liberty, 1858."

"Communication from the Governor Transmitting the Report of the Commissioners of Quarantine. Transmitted to the Legislature February 15th, 1865. Albany, C. Wendell, Legislative Printer, 1865."

With these documents there is also an old poster nine inches long by six inches high, printed in very heavy face type, and reading as follows:

NOTICE!

THE MEMBERS OF THE

Q. B. CLUB

Are requested to meet at their Headquarters
on Thursday, Oct. 24, 1861, at 7 P. M.
By order of the President.

R. T. S.

If this rather mysterious notification was for the purpose of calling a meeting of the "Quarantine Burning Club" it would indicate that those who banded together for this purpose in 1858 had not disbanded three years later.

The first two of the above mentioned pamphlets contain a history of the Quarantine from its establishment on Bedloe's Island in 1758 to the destruction of the hospitals by the citizens of Staten Island on Sept. 1st and 2nd, 1858. The various epidemics of yellow fever on the Island are mentioned, and the hardships borne by our citizens during the existence of the Quarantine, seem to eclipse even those of the Revolutionary period. The third document contains an account of the floating hospital that succeeded the Quarantine at Tompkinsville and of the "burying station" at Seguines Pt., Prince's Bay. The construction of the present Quarantine Islands is recommended, and Dr. Theodore Walser answers at length twelve questions relative to the history and treatment of yellow fever in the Port of New York.

A paper entitled a "History of the Quarantine and Efforts to Remove it from This Island," was read on October 5th, 1857, before the Staten Island Historical Society by Dr. Eadie, and in the "Proceedings of the Board of Supervisors of Richmond County for 1863," there are several reports relative to the Quarantine and the liability of the County to pay the damages caused by the burning of the hospitals.

A "Letter from a High Private," dated "Sepoy Island, September, 1858," and signed "Hannibal Lamb" (said to be George William Curtis), appeared in Harper's Weekly, together with some illustrated articles on the Quarantine. The letter is a satirical account of the

militia stationed on the Island after the burning of the hospitals, and commences:

"Dearest Ma—I am dreadful wet, and I've got a horrid cold in my head, and I've spoiled my best boots tramping round in the dust and dew; but then the sense of the glorious service in which we are engaged is as good as hot bottles to the feet, and delicious as a warming pan in a January bed."

Mr. Walter C. Kerr read the following paper:

THE ANGLE WORM AS A PEST.

The common angle worm is usually regarded as an inoffensive creature and the conditions under which it may exist in such numbers as to cause serious damage may not be sufficiently understood to be regarded as common knowledge among those skilled in agriculture or zoology. This statement is based upon the difficulty experienced in obtaining information regarding means of suppressing such worms in a locality on our Island where their depredations are quite extensive and gradually spreading.

Last spring Mr. DeWitt Stafford of Port Richmond, reported that he had been caused much annoyance by large angle worms cutting his lawn, and throwing up mounds and ridges of earth. The turf was thus made rough and uneven and the grass much injured. Various expedients had been tried without avail, the most effective, however, being the application of a steam road roller which lowered the surface several inches and packed the turf so hard as to form a temporary barrier to the worms. They however, mastered the situation and soon were continuing their work of destruction.

Upon communicating the facts to the Bureau of Animal Industry of the U. S. Department of Agriculture, word was received from the chief of said Bureau recommending, upon the advice of the Government Entomologist, that kerosene emulsion be applied liberally, also expressing doubt as to angle worms being the cause of the difficulty and suggesting that white grub worms might be found

the offenders, as the description rather pointed to their habits. The emulsion, consisting chiefly of kerosene oil and whale oil soap, was profusely applied but without effect.

The depredations not only continued but increased and were reported elsewhere in the same locality. Samples of the worms were then sent to Washington and a report from the Government Entomologist stated that as a result of his experiments they seemed to thrive under applications that would kill any known insect. As worms are not insects it is not altogether strange that ordinary insecticides, such as kerosene emulsion, would not affect them, but it is of much interest to know that nothing at hand in the Government department was found effective. The report suggested a flock of chickens as a possible cure and also recommended, purely as an experiment, that a heavy dressing of kainite fertilizer be applied. As kainite is almost entirely composed of the sulphates of potash and magnesia and the chlorides of magnesia and sodium, such a dressing might reasonably be expected to produce some deleterious influence on animal life.

Communication was then held with the Agricultural Experiment Station at Cornell University resulting in advice from the Director that while he had no experience in the treatment of such difficulties it was probable that the primary cause arose from the soil containing much undecomposed vegetable matter, resulting from over fertilization with manure, and too much water, which would produce an imperfectly aerated surface.

The remedy, in this event, would be a liberal application of lime—about 200 bushels per acre—which would break down the vegetable matter, dry the soil and generally improve its physical condition. The lime for this purpose should be drawn from the kiln before it is air slacked, piled up and treated with an abundance of water until slacked dry and floury. It should then be immediately covered with two or three inches of earth to exclude the air until March or April when it should be spread as evenly as

possible on the turf. If fertilizers are needed only those quite free from nitrogen should be used and water should be used sparingly if at all during the summer. Underdraining is also desirable if practicable.

Under such treatment of their habitation the Director thinks the worms will disappear, while the dressing of lime will itself be quite distasteful to them.

It will be noted that the information regarding remedy thus far secured is only advisory and is not based upon actual experience in the treatment of the angle worm as a pest. The presence of these worms in such numbers as to necessitate measures for their extermination seems not to have heretofore come to the attention of our Government or State authorities and therefore with the conditions as described existing in our vicinity it falls within the province, if not the duty of this Association to lend assistance in the determination of the cause and remedy.

By publication of this matter in its present incomplete condition additional information may be obtained from those who have experienced similar annoyance from these worms, or knowledge may be elicited upon means that have been employed for their extermination.

The occurrence of this instance leads to the suggestion that the services of this Association are always freely offered to the investigation of all matters within its scope and it is desired that residents of the Island will bring to its attention anything of local scientific nature such as injury to crops, gardens or trees, by animals, insects or fungi; the occurrence of rusts, smuts, mildews, etc.; unusual appearance of any natural objects; material found in excavations, such as c'ays, minerals, etc.; the appearance of animals or birds not known to be common; peculiar conditions of streams or ponds or anything in them; in fact anything that may be considered of possible interest in nature.

The Association will through its members, personally investigate such matters and when necessary obtain and supply information of a useful kind.

Dr. Britton remarked on the following

plants recently collected on the Island, most of them additions to records hitherto printed in the Proceedings:

ADDITIONS TO AND NEW LOCALITIES FOR
THE LOCAL FLORA.

Ranunculus Pennsylvanicus L. New Dorp, (A. A. Tyler). A species abundant northward, here reaching nearly its southern range along the coast. It is reported from Freehold, Monmouth Co., N. J., by Dr. Willis.

Onagra (*Oenothera*) *Oakesiana* (A. Gray) Britton. Abundant from New Dorp to South Beach. This is the most southern station reported for the species, which differs from the common *O. biennis* in its smaller flowers with spreading calyx-segments.

Anthriscus vulgaris (L.) Hoffm. An Umbellifer, native of Europe, very sparingly adventive into North America. Two or three plants were noticed at New Dorp.

Schollera macrocarpa (Ait.) Britton. A fine patch of this cranberry was found along the salt meadows near New Dorp.

Veronica Anagallis-aquatica L. Found at New Brighton by Dr. F. Hollick. The species is widely distributed through New Jersey, and eastern Pennsylvania, and appears, as it occurs in this region, to be naturalized from Europe.

Pentstemon Digitalis (Sweet) Nutt. Found by Mrs. Britton in a field at New Dorp. This fine plant, with showy white flowers, is native in the Southern States, but is spreading as a weed.

Meniha gentilis L. Egbertville, (A. A. Tyler.) This mint is usually confounded in America with *M. sativa*, but is readily distinguished from that plant by the light green blotches of its leaves, and by other features.

Mentha citrata L. A pleasantly odorous mint, found in large quantities at Richmond Valley. Both this and the preceding species are natives of Europe.

Alnus incana (L.) Willd. A clump of the northern alder was observed near Grant City. This is most southern station known for the species.

Potamogeton Spirillus Tuckerm. Collected by Mrs. Britton in a pond near

Oakwood.

Panicum pubescens Lam. and *Panicum commutatum* Schultes, occur abundantly in the sandy soil about Richmond Valley.

Panicum verrucosum was found by Mr. Tyler in moist soil near New Dorp. The Tottenville locality for this grass recorded in 1879 has been destroyed.

Carex tenera Dewey, a sedge confounded with *C. straminea*, occurs in abundance along salt meadows near New Dorp.

Carex muricata L. This is a European species, found on lawns at New Dorp.

Carex tribuloides Wahl. Collected by Mr. Tyler at Tottenville and Grant City.

Mr. Thos. Craig exhibited specimens of a *Lemna* under the microscope, with the following note:

Lemna Valdiviana PHILIPPI(?)

In Gray's Manual this species is described as follows: "Fronds elliptic oblong, small, 1" long, rather thick, usually somewhat falcate, obscurely 1 nerved," and its range is said to be from New Jersey southward and westward across the continent. It is reported in Britton's "Catalogue of Plants Found in New Jersey, and is included in the Torrey Botanical Club's "Preliminary List of the Anthophyta and Pteridophyta reported growing within 100 miles of New York," but it has not hitherto been noted on Staten Island.

The specimens were found in water dipped out of Wolff's pond on the south side, near Prince's Bay. In the several specimens which I mounted I have been unable to observe any trace of a nerve, which leads me to doubt the determination. The frond, leaf or stem, whichever it may be called, has no more appearance of nerve or rib than a piece of marine *Ulva*. The plants will be subjected to further examination.

Mr. Eric T. King reported that several human skeletons had recently been unearthed at Arrochar in street cuttings. They were at first thought to be the remains of Indians, but some of the bones were examined by Mr. Joseph C. Thompson who declared them to belong to white men.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. No. 3.

JAN. 11th, 1896.

Meeting held at the residence of Capt. A. L. King, Arrochar.

In the absence of the President, Capt. King was elected chairman *pro tem*.

Mr. J. Blake Hillyer, West New Brighton, was elected an active member.

Mr. Ira K. Morris, on behalf of the Benham Monument Committee, presented the following resolution, which was adopted :

WHEREAS, During a former session of the National Congress a bill was presented by the Hon. Franklin Bartlett, representative from the Seventh Congressional District of New York, to secure an appropriation of \$10,000 with which to erect a monument in honor of the late Commander Timothy Green Benham, of the United States Navy; and

WHEREAS, The said bill was presented too late in the session to secure proper recognition, therefore be it

Resolved, That the Natural Science Association of Staten Island respectfully petition the Hon. Franklin Bartlett to renew his efforts to secure the said appropriation, and thus aid the citizens of the country which Commander Benham served so gallantly, loyally and so long, to recognize even at this late day a hero's devotion to the nation and its flag.

And the following, which was also adopted :

WHEREAS, A ferry is to be re-established at Holland's Hook, in the Town of Northfield; therefore,

Resolved, That this Association respectfully petition the officials of the Staten Island Electric Railroad Company and all other corporations interested in the locality as a terminus for their roads, to preserve the historic name of Holland's Hook, and thus refrain from adopting the common error of calling it Howland's Hook.

Mr. Arthur Hollick exhibited specimens of iron ore and a thin section of the same for microscopic examination, with the following memorandum :

IRON ORE FROM THE VICINITY OF NEW SPRINGVILLE.

At a recent meeting of the Association Dr. Britton mentioned the occurrence of red jasperoid iron ore as a prominent constituent of the surface drift material near New Springville. A recent visit to the locality revealed a number of prospecting pits, which had evidently been dug with the object of searching for the source of the ore. Some of these, on the east side of the road leading to the Fresh Kills bridge, had been excavated to a depth of fifteen feet or more, through the drift, without apparently having reached bed rock. In the material thrown out however, was a small amount of limonite ore, similar to that from the Ocean Terrace and Todt Hill deposits. It is quartzose and contains considerable talc and asbestos, indicating the existence of the serpentine or soapstone formation at no very great distance and probably in close proximity to the trap ridge. It is of interest as extending our knowledge in regard to the probable area occupied by the serpentine.

Mr. Wm. T. Davis exhibited specimens of the common tree toad, both full grown and in the tadpole state and read the following memorandum :

NOTE ON THE COMMON TREE TOAD.

During the past summer a number of tadpoles of *Hyla versicolor* were collected in the ponds on the Concord downs. The young toads reared from them had smooth skins and were pea-green in color, with a purple spot on each side of the head. In about a week they changed form slightly; their backs became warty, and in other respects they were more like the

mature toads. One of them which I watched more closely than I did the others, refused to eat until the last remnant of his tail was absorbed, then he was glad enough to accept the offered fly. He also learned after a time to eat small pieces of raw beef. The specimen mentioned in the Proceedings for November 14th, 1891, was a young *Hyla versicolor*, a day or two out of the tadpole state, and not a *Hyla Andersonii*.

Mr. Davis also exhibited a stem of a *Sedum*, growing in water, and read the following memorandum :

STONE-CROP GROWING UNDER WATER.

At the September meeting of the Association several members examined a branch of a cultivated *Sedum* about a foot in length, which had been placed in a jar of water and was developing roots. Later

a number of branches started at the nodes, from which the leaves had been removed, and grew quite luxuriantly under water, developing numerous green leaves. Still later, after cold weather, to which the jar and its contents were exposed, the plant shed all of the leaves above the water, those beneath still continuing their growth. At the present time, after being submerged four months, it will be seen that the specimen has eight rosettes of leaves and altogether presents, in a jar of water, a comely and interesting object.

Mr. Davis also showed butterflies, mounted in plaster, prepared by Denton Bros., Wellsley, Mass. The method is admirably adapted for exhibition purposes.

The Secretary presented a sample copy of the index to vol. iv of the Proceedings, which will be distributed with the current number.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. V. No. 4.

FEB. 8th, 1896.

Meeting held at the residence of Mr. Fred. F. Hunt, St. Mark's Place, New Brighton. The President in the chair.

Mr. William J. Lederle, New Brighton, was elected an active member.

Mr. Ira K. Morris, on behalf of the Benham Monument Committee, presented a copy of the bill which has been re-introduced in Congress by Hon. Franklin C. Bartlett, "for the erection of a monument to the late Timothy Green Benham, at Richmond, Staten Island, New York."

On motion of Mr. Morris a committee of three, including the president, was appointed to endeavor to secure the purchase of the Billop house at Tottenville, by the State. The president appointed Mr. Morris and Mr. Cornelius G. Kolff on the committee.

Mr. Morris presented a copy of

A DOCUMENT FOUND AMONG THE PAPERS
OF THE LATE REV JOSEPH TOTTEN,

the inscription on whose tombstone at Woodrow has been familiar to several generations of Staten Islanders. The inscription states that he was among the first members of the Methodist Episcopal church on this Island. A full account of this pioneer preacher will appear in the story of Old Families in the forthcoming Memorial History of Staten Island.

The document refers to the Richmond and Amboy Roads, and is in the Rev. Joseph Totten's hand writing. It must have been written prior to 1774 and may never have been acted upon by the authorities. It reads as follows :

The road from New York Ferry to Amboy Ferry to be opened $2\frac{1}{2}$ rods wide

all the way through, beginning at Darbe-dials [Darbe Dials] dock near the watering place, from thence as the road is now used along by the southeast corner of his barn, remove the incumbrances on the north side, from thence as the road is now used, through Cornelius Corsen's land, remove the incumbrances on both sides so as to straighten the road on proper grounds, to John Vanderbilt's well; from thence to a bridge opposite the little clove along as the road is now used, remove the incumbrance there is on the north side, from thence along Perrines land to Garrison's land, remove the incumbrances on the north side so as to straighten the road along as it is now used, from thence to Jacob Barragoes Smiths shop, remove the incumbrances on both sides so as to straighten the road along as it is now used, thence to the northwest corner of Cornelius Martinnows land, remove the incumbrance that is on the north side, from thence through Henry Garrison's land, remove the incumbrances on both sides so as to straighten the road along as it is now used, to the south division; thence to Mawness Garrison's house, remove the incumbrance on the north side; thence to the northwest corner of Fountens land, remove the incumbrance that is on the south side; thence through Perrines land, remove the incumbrance on both sides so as to straighten the road along as it is now used; thence to Cortel-yeloes well, remove the incumbrance that is on the south side; from thence to John Bates land, remove the incumbrance that is on the north side; thence to John Vanderbilt's Smith's shop, remove the incumbrance that is on both sides, so as to straighten the road along as it is now

used, from thence to stony brook, remove that incumbrance that is on the south side; thence to Cortelyoes southwest corner, remove the incumbrance that is on the north side; thence through Valentine's land, so along DeYoung's to Justice Lake's land, remove the incumbrance that is on both sides, so as to straighten the road along as it is now used, so along Lake's land to a walnut saplin marked, remove the incumbrance that is on the south side, so as to straighten the road on proper ground; from thence the road altered along by a chectnut tree and a black oak tree both marked, to be to the south ward of said trees along to his barn, if he makes it good and passable at his own cost, thence through the woods as the road is now used to Silas Bedle's house, remove the incumbrance that is on the south side; thence to LaForge's hill, remove the incumbrance that is on the north side; thence to Indian Hill, remove the incumbrance that is on both sides, so as to straighten the road as it is now used, thence to Richard Cole's house, remove the incumbrance that is on the north side; thence to Captain LaForge's house, remove the incumbrance that is on the south side; thence to Moore's hill, remove the incumbrance that is on the north side; thence to Sandy brook, remove the incumbrances that is on both sides so as to straighten the road as it is now used from thence to DuBois land, remove the incumbrances that is on both sides, so as to straighten the road as it is now used, so along DuBois land to his southwest corner, remove the incumbrance that is on the north side, so as to straighten the road along as it is now used, from thence to John Winninents house, remove the incumbrance that is on the north side, from thence to a white oak tree standing in the road, remove the incumbrances that is on both sides along as the road is now used thence ten feet from the northwest corner of Gilbert Totten's house, remove the incumbrance that is on the north side, along as the road is now used; from thence to an apple tree opposite to Jacob Rickhouse barn, remove the incumbrances that is on both sides, so as to

straighten the road along as it is now used, from thence to Jacob Rickhouse house, remove the incumbrance that is on the north side; from thence to Col Billopps ferry, remove the incumbrances that is on both sides, so as to straighten the road along as it is now used, this road to be opened 2 rods and half wide, clear of all incumbrances through the whole of it.

Mr. Walter C. Kerr referred to the paper on antitoxin, read by Dr. C. W. Townsend at the December meeting and read a paper on

AN EXPERIENCE WITH ANTITOXIN.

The increasing use of antitoxin as an immunizing agent and curative specific has led to so many erroneous statements especially regarding its after effects, that the record of a somewhat extended recent experience may be of interest.

In a household consisting of ten adults and eight children, twin sisters three years of age developed diphtheritic symptoms and were promptly given 7 antitoxin units and quarantined. The remaining six children and the adults had been more or less exposed for several days. Cultures showed the true Klebsiella bacilli and immunizing doses of 250 antitoxin units were given to each of the other children and to the adults, except three of the servants who refused and who happened to be the three least exposed to the infection. The twins were also given 450 additional units.

Two days later a girl eleven years old showed slight diphtheritic symptoms which quickly passed with no formation of membrane, nor even white spots on the tonsils. Cultures showed the Klebsiella bacilli but no additional antitoxin was given.

In a week from the first appearance of the disease the twins had quite recovered while the older girl was apparently well after the first day—in fact she had scarcely been ill. Cultures however showed one twin free from the germs, the other suspicious, while the throat of the older girl retained the bacilli in abundance. It was not until the lapse of another week

that the cultures showed absence of germs, when quarantine was promptly broken.

Meanwhile two other children became ill with sore throats and fever and, under the circumstances, gave such evidence of diphtheria infection, that one was given 900 and the other 600 additional antitoxin units. Repeated cultures however showed total absence of the true germs and it is as doubtful whether they received the infection as it is certain that if they did the antitoxin completely counteracted it, for they did not have diphtheria.

The antitoxin first used was Behrings No. 3, containing 150 units per cubic centimeter. That used for immunizing was from the New York City Health Department and contained 350 units per c. c. while the later curative doses were from the same source but contained 400 units per c. c. or nearly three times the strength of the strongest regularly sold and used.

Of the fifteen persons receiving immunizing doses of the antitoxin, four of whom also received curative doses, the only after effects consisted of a slight rash, painless and harmless, which followed some days after giving the 600 unit curative dose to one of the two children who showed symptoms but did not develop the disease. This child, and the one to whom 900 units was given, had rather high fevers about six hours after the injections. The fever yielded readily to ordinary medicines and it is doubtful to what extent it was induced by the antitoxin as they were previously quite feverish. The remaining thirteen would never have known that they received the injection except for the prick of the needle.

The several facts may be summarized thus:

1. By the prompt and liberal use of antitoxin, good care and the usual local treatment, diphtheria was confined to three light cases in a household of eighteen persons all of whom had been more or less exposed.

2. Its application to fifteen persons produced no after effects except one case of harmless rash.

3. Repeated cultures gave accurate

knowledge of the progress of the disease in each case.

4. The one having the disease most severely showed, by culture, freedom from germs quite promptly after apparent recovery.

5. The one having the disease most lightly retained the germs, as shown by culture, until ten days after apparent recovery and hence was capable of spreading the infection during that time.

6. Cultures only can determine when the germs are absent and when it is safe to break quarantine.

It may be of interest to mention that the cultures are made by taking a sample of the matter from the throat on a small cotton swab mounted upon a sterilized wire and rubbing the swab on the surface of a gelatinous material in a glass tube. This material is composed of horse blood serum and beef bouillon. The tube, corked with cotton, is placed in an oven like a box, where under gentle heat, in about thirty-six hours, the germs multiply in "colonies" of thousands and can then be secured in sufficient numbers to be removed, mounted, stained and examined microscopically.

A point of interest in connection with the much misrepresented after effect is the fact that the antitoxin itself produces no after effect under any circumstances whatever and the occurrence of rash which is not infrequent and the rarer occurrence of pain in the joints is caused solely by the horse blood serum in which the antitoxin is contained. It is therefore obvious that a very strong antitoxin serum gives less opportunity for after effects because of the smaller quantity needed to convey a given number of antitoxin units. The reduction of quantity is very desirable also as a matter of convenience in administering. The strongest preparation obtainable should therefore be used and although the No. 3, containing 150 units per cubic centimeter, is the strongest sold, very soon strengths of 500 or more units per c. c. will be obtainable.

Mr. Thos. Craig exhibited under the microscope an *Oscillaria*, supporting a

fungous growth, and read the following memorandum :

A RARE FUNGUS PARASITIC ON AN
Oscillaria.

I have to report that on New Year's day I found in an old mill pond on Willow Brook, near Bradley's road, an *Oscillaria* of a light brown color in single filaments, but of a deep seal brown velvety appearance in masses. *Oscillarias* are common enough but in this one many of the filaments had one or more bulbs growing from one of the ends. On close examination under the microscope, with a power of 670 diameters, it was apparent that the projecting growth was a fungus. At the end where the growth of the fungus took place, from 30 to 60 or more of the *oscillaria* cells were somewhat broken down and had turned to a light green color, in which could be plainly seen the mycelium of the fungus,—the bulb at the end being the fruit or zoösporangium.

Some of the material was sent to Professor Johnston of Ann Arbor, Mich., who says : "I never saw anything like it before and shall not be surprised if it has not been recorded from this country. It is *Chytridium subangulosum* A. Br., one of the very lowest fungi." In the bulb at the end a large number of zoöspores are formed, each provided with a single

flagellum. They escape and start a new growth on another filament. It is described briefly by P. A. Dangeard in a paper on "Les organismes inferieures," in *Annales des Sciences Naturelles* (Botanique.)

Prof. Roland Thaxter of Cambridge, Mass., says : "The material as it reached me was not in very good condition but is yet sufficient to show that the parasite belongs to the Ancylisteae. The only described form that I know about which seems nearly related to it is in the *Resticularia* of Dangeard, which is parasitic on *Lyngbya*. Your plant is certainly specifically different from that described by Dangeard and probably generically distinct, but in the absence of resting spores it is not possible to place it with any certainty."

From the foregoing it will be seen that I am unable to definitely name the fungus. It seems that it is closely allied to some found in Europe, but apparently has not yet been described from this continent. Prof. Thaxter has asked me to watch the development of the *Oscillaria* during the coming year and if the fungus again appears to furnish him with the material.

Mr. Craig also stated that the *Lemna* mentioned in the Proceedings of Dec. 1895, as probably referable to *L. Valdensis*, had been definitely determined to that species.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. V. No. 5.

MARCH 14th, 1896.

Meeting held at the residence of Mr. Joseph C. Thompson, Rosebank. The president in the chair.

Mr. Francis C. Geer, Dongau Hills, was elected an active member.

Mr. Thompson read a paper giving a popular account of what is known in regard to the life history of *Plasmodium malarie*. Specimens of the organism were also shown under the microscope.

Mr. Thomas Craig exhibited specimens of a Rotiferon and presented the following account of the same :

A NEW ROTIFERON.

A short time ago while examining an aquarium which had not been touched for several months, I observed some small brownish tufts of a flocculent material attached to the roots of a *Myriophyllum*. The material had somewhat the appearance of that made by *Stentor polymorphus*, and as that is rare at this season of the year I concluded to take a look at it.

On placing the piece of root in a deep cell under the microscope I was surprised to find it a collection of Rotifers. On further examination I made it out to be of the genus *Philodina* and as I had not before seen one of the kind and could find no trace of it in any of my books I sent some to Dr. A. C. Stokes for his opinion, which is here given.

527 Monmouth Street,
Trenton, N. J.

Feb. 27, 1896.

DEAR MR. CRAIG :—Your rotiferon is, I think, a new species. It is an undescribed *Philodina* having affinities with *Philodina macrostyla* of Ehrenberg. Instead of covering its body with floccose matter, as *Ph. macrostyla* does, your

species collects such matters into a soft mass and uses it as a temporary domicile, in which it also deposits the eggs. The ramus has two teeth; and notice the peculiar little hook on the back of the ramus; whether this is present on both I have not positively decided; that you can do at your leisure. But notice especially the four toes of your species, which are somewhat similar to the four of *Ph. macrostyla*, but entirely different. I think that *Ph. macrostyla* is the only recorded species with four toes; yours will make the second, as far as I can determine without making a special search through the books. There are other visible structural points which you have either seen or will see without trouble. The rotiferon is exceedingly interesting, and is, I am sure, undescribed. It is a good traveller, as the bottle contained many living specimens, and I have seen several leave the eggs. It is a good traveller in another sense, too, for when it leaves its temporary anchorage, its passage through the water is nothing short of frantic, and exasperating to the microscopist, but I am glad to have seen it.

Very truly yours,

ALFRED C. STOKES.

Following his advice I have made a close but not an exhaustive study of the animal.

It is, comparatively speaking, a large and handsome creature. The body is white with a number of longitudinal folds. The frontal column is stout and furnished with cilia. The corona, when expanded, is wider than the body. The antenna is plainly two jointed (that is in two pieces) and is furnished with setæ at the ends. It

may be three jointed, the terminal one very small. The mastax is of the ramate type with two teeth. The two eyes are red and conspicuous, kidney shaped and oblique.

The ovaries are large and in some cases double, one on each side of the stomach.

The foot is six jointed and is terminated by four toes, and some distance above the toes are two large stout spurs.

The cloaca is on the dorsal side in the first joint of the foot. A pulsating vacuole, situated at the lower end of the first joint of the foot, has a beat of about ten seconds.

From the habit of this rotifer of living in large colonies surrounded with a flocculent material composed of particles of algae and the digested food of the animal, in which it deposits its eggs, I propose to name it *Philodina socialis*.

When removed from its home it moves about restlessly on the slide until it catches hold of some soft material with its foot, and then ceases from wandering, and proceeds to collect food. It resembles *P. megalotrocha*, figured in The Rotifera, by Hudson & Gosse, plate 9, fig. 7.

Mr Wm. T. Davis exhibited specimens of an *Ancylus* and read the following memorandum :

AN ADDITION TO THE LOCAL LIST OF MOLLUSCA.

In Mr. Sanderson Smith's list of the

Mollusca of the Island (Proceedings, Vol. I., p. 50) no species of the genus *Ancylus* is mentioned. Last Jannary a bottle of aquatic life was collected in the small pond made by damming Willow Brook to the west of Bradley's road. Two young specimens of *Ancylus* have appeared in this material, which Mr. Smith thinks belong to the species *rivularis* of Say.

Mr. Davis also presented completed manuscript of "Staten Island Names, Ye Olde Names and Nicknames," together with a map of the Island by Mr. Charles W. Leng. On motion of Mr. Cornelius G. Kolff the following resolution was adopted :

Resolved, That the thanks of the Association be and are hereby tendered to Messrs Wm. T. Davis and Chas. W. Leng for their efforts in preparing "Staten Island Names, Ye Olde Names and Nicknames," and for the generous conditions under which it is offered to the Association, and

Resolved, That the Association accept the same and cause to be printed 600 copies, as a special number of the Proceedings, of which 200 copies be presented to Messrs. Davis and Leng, in recognition of their valuable work in local history and the service which they have thereby rendered the Association and the community.

Mr. George H. Pepper exhibited a rough stone implement, resembling a palæolith, found during the excavation for the foundation of White's dental factory at Princes Bay.

Staten Island Names

Ye Olde Names and Nicknames.

By William T. Davis,
With Map by Charles W. Leng.

PUBLISHED BY THE
NATURAL SCIENCE ASSOCIATION,
NEW BRIGHTON, STATEN ISLAND, N. Y.

PRICE FIFTY CENTS.

THE STANDARD PRESS :
NEW BRIGHTON, N. Y.
1896.

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PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. NO. 5.

(SPECIAL NO. 21)

MARCH 14th, 1896.

STATEN ISLAND NAMES

YE OLDE NAMES AND NICKNAMES.

BY WILLIAM T. DAVIS,

With Map by Charles W. Leng.

INTRODUCTION.

As the population of Staten Island increases the names of its natural features give place more and more to artificial ones; the hills are dug away and avenues laid out across the swamps. Thus Tushy's Pond and Prospect Hill are now only names. It becomes expedient, therefore, to preserve the old, so that even the ever changing maps, that also fall within the laws of evolution, cannot make us forget Duxbury's Point or the Watering Place.

The object of the present paper is to record these local Staten Island names—the forgotten names that were once well known, and the nicknames that have from time to time been bestowed on certain streets, hills and hollows. The record is not supposed to be complete, for from the days of the Dutch colonists through the times of the British governors and the present rule of the States, about two hundred and fifty years in all, people have been giving names to various parts of the Island. A few of these, from their peculiar fitness, have survived, but many more have been forgotten; or, worst of all, abandoned for less appropriate ones. Certainly poor taste has been shown in changing Watchogue into Bloomfield; the Old Place Road into Washington Avenue; and in the still later attempt to make a part of the Clove Road support the less distinctive name of Brooks' Avenue. The old roads are interesting in many ways, and at least an effort should be made to preserve their original names. They can often be identified without the aid of the first maps of the Island, or the Dutch stone houses that were built along them, for they are worn down until they are lower than the fields, or the bases of the stone walls built along their sides. A good illustration of this is the present Willow Brook Road, from the Turnpike to Richmond Avenue; and the old Clove Road, before it was repaired last year, was a fine example. Owing to its great extent of salt meadow Staten Island has many roads that, from their ephemeral character, are termed "drift roads." They are such as are constructed by use, from the meadows to the main highways, and change from time to time as utility suggests.

The meadows are often regarded in the sense of water—a sea of grass—by those who live near them, and if there is a rise of land in the midst of this grass it is called an island. As examples of this kind we have Price's Island, Lake's Island and Poppy Joe's Island.

On the best maps of Staten Island only three or four of the creeks are named, and these often erroneously. In this particular it is hoped that the present paper and accompanying map will be of use to future topographers. Many of the small creeks have no names, but are called "little guts" by fishermen and other frequenters of the meadow lands and shore.

In the following pages the "Land Papers" are often mentioned. The book quoted from is the "Calendar of N. Y. Colonial Manuscripts, indorsed Land Papers; in the Office of the Secretary of State of New York, 1643-1803." It will be seen from a perusal of this volume that the land on Karle's Neck and on Long Neck was in great demand in 1675 and later, and on one of the oldest maps, published in 1781, the words "well settled" are placed across that portion of the Island. Some names have also been collected from the following maps:

"Map of New Netherlands, with a view of New Amsterdam (now New York), A. D. 1656," by A. Vander Donck. Reprinted in Valentine's Manual, 1852.

"A Draft of New York from the Hook to New York Town, by Mark Tiddeman. Printed for W. Mount and T. Page, upon Tower Hill, London." The original is not dated, but was probably published early in the eighteenth century. A reprint is given in Valentine's Manual for 1855.

"Bay and Port of New York, Capitol of New York," executed by S. Bellin in 1764 and reprinted in Valentine's Manual for 1861.

"Plan of New York Island, with a part of Long Island, Staten Island, and East New Jersey; with a particular description of the engagement on the Woody Heights of Long Island between Flatbush and Brooklyn, August 27, 1776, between Gen. Howe and Gen. Putnam. Engraved and published Oct. 19, 1776, by W. Faden, London."

"Long Island. The seat of action between the British and American forces, or an authentic plan of the western part of Long Island, with the engagement of the 27th of August, 1776; containing also Staten Island and the environs of Amboy and New York, with the course of Hudson's river from Courtland, the great magazine of the American army, to Sandy Hook. From the surveys of Major Holland. Sayer and Bennett. London, 1776."

"A sketch of the operations of His Majesty's fleet and army under the command of vice admiral the Rt. H'ble Lord Viscount Howe and Genl. Sr. Wm. Howe, K. B., in 1776. Published according to act of Parliament, Jan'y 17th, 1777, by J. F. W. DesBarres, Esq." Reprinted in Valentine's Manual, 1864.

"A Chorographical Map of the Province of New York in North America * * * by Claude Joseph Sauthier. London, W. Faden, 1779." Reprinted among the maps of the N. Y. Documentary History, Albany, 1849.

"Chart and Plan of the Harbor of New York and the country adjacent, from Sandy Hook to King's Bridge; comprehending the whole of New York and Staten Islands, and part of Long Island and the Jersey shore, and showing the defences of New York both by land and sea. London. J. Bew, 1781." This map appeared in the "Political Magazine," November, 1781, and was reprinted in the "Manual of the Common Council of New York" for 1870.

An account of the environs of New York, bearing the same title as the "Chart and Plan," reads in part as follows: "Staten Island is in general rough and hilly, but on the south side there is a considerable tract of good level land. On the heights on the side towards New York we have redoubts usually garrisoned with 1,000 or 1,500 men. The Rebel parties frequently steal across the narrow sound which separates it from the Jersey shore, and carry off a straggler or two or plunder the inhabitants. Brigadier General Skinner, a refugee from the Jerseys, at present commands there. The Rebel General Sullivan made an attack on it in form in 1777, but was repulsed with considerable loss by General Campbell, who was lately taken in Pensacola by the Spaniards."

"A New and Correct Mapp of the County of Richmond, made in the Year 1797, Agreeable to an Act passed by the Legislature of the State of New York, passed the 28th day of March, 1797, by" (no name given). "We the subscribers Supervisors for the County of Richmond have Caused this Mapp, Containing the Outline of the County of Richmond, to be Made According as the Law in such cases has decided.

JOHN TYSEN, DANIEL LAKE, ABM. BURBANK, BENJ. LARZELERE,	}	Sup'r."
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Bernard Sprong and Richard Conner were no doubt the authors of the above map as appears from the following, copied from the "Annals of Staten Island": "1797, Dec. 14: Bernard Sprong for making a map of the towns of Southfield and Westfield and surveying Smoking Point Road. £6. 6. o.

"Richard Conner for making a map of Castleton and Northfield and service of Clerk of Supervisors. £7. 2. o."

Mr. Crowell Connor, of Richmond village, has shown me the surveyor's instruments used by Richard Conner, and probably the same employed in making the map of 1797.

"Map of the country thirty miles round the City of New York, designed and drawn by I. H. Eddy of N. York, 1812. Published by Prior and Dunning, map and chart sellers, No. 111 Water St."

"Map of Long Island with the environs of New York and the southern part of Connecticut, compiled from various surveys and documents by J. Calvin Smith." Published by J. H. Colton & Co., New York, 1836.

"Staten Island. Map of New Brighton, Tompkinsville, Stapleton and Clifton; showing the surrounding neighborhood. Surveyed and drawn by C. H. Blood, 1845."

"Map of the country thirty-three miles around the City of New York. Drawn by J. W. Colton. Published by J. H. Colton, 86 Cedar St., New York, 1846."

"Sidney's map of twelve miles around New York, with names of property holders, &c., from entirely new and original surveys; 1849."

"Map of Staten Island or Richmond County, surveyed by J. C. Sidney, published by M. Dripps, 1850. For sale at Tanner's, 201 Broadway, N. Y."

"Map of the State of New York, by David H. Burr. Published by J. H. Colton, 86 Cedar St., New York, 1852." Staten Island is shown on a small scale on this map; New Bristol and Cityville are given as localities.

"Map of Staten Island, Richmond County, New York. From Surveys under the direction of H. F. Walling, 1859. Published by D. A. Fox, Nos. 356, 358 & 360 Pearl Street (Franklin Square), New York."

"Higginson's Map of New York and Vicinity, embracing the counties of Kings and Richmond, N. Y.," &c. Published by J. H. Higginson, 77 Chambers St., N. Y., 1859. In 1860 Higginson reproduced his map of Staten Island for the Grover & Baker Sewing Machine Co.

"Map of Staten Island (Richmond Co.), N. Y., also Cities of Bayonne and Perth Amboy, N. J., showing Topography, Farms, Shore soundings, &c. Published by M. Dripps, 34 Vesey St., N. Y., 1872."

"Atlas of Staten Island, Richmond County, New York, from official records and surveys, compiled and drawn by F. W. Beers. Published by J. B. Beers & Co., 36 Vesey Street, New York, 1874."

No names introduced later than 1874, with the exception of a few nicknames and road names have been included in the present paper. Neither has it been thought advisable to mention the locality names now in common use. In 1857 the general government having completed a survey of the Island (see *Staten Islander*, May 9th, 1857), published a map giving topographical features, fence lines, &c. This map can no

longer be obtained, but the present chart of the "Bay and Harbor of New York," published by the U. S. Coast and Geodetic Survey, presents on a reduced scale many of the features of the older map. A recent "Topographical Map of Staten Island, Richmond County, State of New York," by Vermeule and Bien, 1890, is excellent in these particulars, and is in many respects the best map of the Island. There are several maps of interest filed in the Clerk's office at Richmond, among them the one showing the boundary lines of the so called estate of Lancaster Symes and Peter Roosevelt, about which there has been so much controversy. This map was proved in court to be unreliable. Of real value and interest is the "Map of the Richmond Plank Road, from Vanderbilt's Landing to Rossville, 10.297 miles. J. B. Bacon, Surveyor, Staten Island, 1853." Filed 30th June, 1853, No. 114. This map names all of the property owners along the Plank Road in 1853, and also names the cross roads.

The "Annals of Staten Island, from its Discovery to the Present Time, by J. J. Clute, New York, Press of Chas. Vogt, No. 114 Fulton Street, 1877," and the "History of Richmond County (Staten Island), New York, from its Discovery to the Present time. Edited by Richard M. Bayles, New York, L. E. Preston & Co., 1887," have been drawn upon for many facts. The following publications also contain a few names: "Abstract of the Title of Thomas E. Davis to Certain Lands in Castleton, in the County of Richmond, Comprising the Principal Part of the Real Estate lately belonging to the New Brighton Association. New York: Printed by William Osborn, 88 William Street, 1844." "Hand-Book and Business Directory of Staten Island, 1870." "Report of a Preliminary Scheme of Improvement, Presented January 12th, 1871," by the Staten Island Improvement Commission. "Proceedings of the Natural Science Association of Staten Island." Historical papers by Mr. Ira K. Morris, many of which are contained in the last mentioned proceedings. Manuals of the Common Council of New York, prepared for many years under the direction of D. T. Valentine, who also contributed numerous historical articles.

Numerous persons have mentioned to me such names as they remembered,* and in rambling about the Island I have knocked at the doors of many strangers who have treated me with uniform kindness. In this way the record of the present-day names of the natural features of the Island, such as points, hills, valleys, &c., included in Part I., has probably been made fairly complete. The more artificial names in Part II. did not appear as topographical features, and in consequence were more easily overlooked. No doubt there are more of these, and also old names, that might have been added by some one in the habit of searching the records of the county.

It will be seen that occasionally the proper names are not spelled the same in different parts of the present article, which is due to the fact that they are variously given by the original authorities. A conspicuous example of this kind is what is now known as Shooter's Island, which has had a long ancestry of variously spelled names, all having a similar sound.

The paragraph on the Hesssian Spring contains a few statements worthy of more than passing notice. It will be seen that in 1834, when the valley through which Jersey Street now runs was pasture land, with many of the hill sides covered with

* I am indebted to Lot C. Alston, D. M. Ayres, Robert Barnes, W. S. Benham, F. H. Bergen, E. Braisted, E. C. Bridgman, Dr. N. L. Britton, W. H. Bostwick, Richard Cole, H. W. Congdon, John J. Corson, Thomas Craig, Matthias DeHart, Edward C. Delavan, Jr., J. C. Disosway, Mr. and Mrs. Austin Dupuy, Crowell Dupuy, Theo. R. Eadie, Joseph Esterbrook, Jr., William R. Eddy, Cornelius S. Egbert, L. W. Freeman, Louis P. Gratacap, John H. Garretson, William P. Hagedorn, Arthur Hollick, John J. Kenney, Rev. James E. Kenney, of Old Place, for anecdotes as well as names; Walter C. Kerr, Mrs. Anna Keteltas, C. W. Kuepper, for map of 1812; J. A. LaForge, S. J. Laforge, Charles W. Leng, Thomas Merrill, Joseph W. Mersereau, H. T. Metcalf, James A. Morgan, Ira K. Morris, for old newspapers, &c.; D. R. Norvell, James L. Page, William S. Page, George H. Pepper, for much information relating to the western end of the Island; H. W. Putnam, George M. Root, for old papers and maps; Miss J. B. Seaman, Henry H. Seguire, William Seguire, Sanderason Smith, for maps and literature; John W. Storer, Gustave Swainson, Miss F. J. Thompson, Dr. C. W. Townsend, Percival G. Ullman and John Waters.

timber, this spring gave such an abundance of water that it was considered feasible to use it as a source of supply for the village of Tompkinsville. The spring is now dry. Clove Valley to-day is in the same condition that the Hessian Spring valley was in 1834, and much might be done toward preserving a great portion of it as a water shed, which could also be made into a beautiful park. It would cost no more, if as much, to do this now, to preserve the land and the timber, than it will by and by to bring the water from a greater distance—perhaps from New Jersey.

Lastly, I wish to thank Mr. Charles W. Leng, who has kindly made a map of the Island on which, at least, most of the names will be found. The places omitted could not, as a rule, be accurately located. It is not claimed that this map is correct in every particular, for it was mainly drawn with the idea of showing the location of old places and natural features; the roads, with the exception of the old ones, being considered of minor importance. The roads on the map of 1797 are indicated on the present map, but it is likely that the old map did not show all of the roads in use at the time it was made. Thus the Old Town Road is not given and but a small section of a road along the north shore and none along the east shore. Only a copy of this old map has been available, and this may contain some errors, though made by a careful hand. The original is on file in Albany.

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PART I.

NAMES FOR STATEN ISLAND AND SURROUNDING WATERS.

Mo-ta=nucke, Mo=nock=nong, Aque=hon=ga, Egh=qua=ous. "Early names of Staten Island, the last two meaning, High Sandy Banks." Indian names in New York, by W. M. Beauchamp. "Schoolcraft interprets 'Aquehonga Manacknong,' as far as the place of bad woods. The meaning of 'Eghquahous' is also interpreted the place of bad woods." Bayles, p. 1. Clute, p. 8. 'Sujnen' is given as a name for Staten Island in Valentine's Manual, 1852, p. 401.

Staaten Eylant. The name given to the Island by Henry Hudson. Clute p. 8.

Groote River, Manhattens River, Montaigne Rivier, Noort River, Maurits or Mauritse River. Early names for the North or Hudson River. Bayles, p. 46; Old map copied in D. T. Valentine's Manual, 1852. The early navigators considered the mouth of the river to be at the Narrows. The town of Castleton when laid out, was bounded "easterly by Hudson's River." Bayles, p. 326.

Sand Bay. Near the Fort at the Narrows. "Warrant to the attorney general to prepare letters patent for John Belue and John Dove of Staten Island, to keep a ferry at a place called the Sand Bay to run from thence to New York, Long Island and other adjacent places." Land Papers, 1713. (See Dove and Belue's Ferry.)

Coeuraet's Bay, Port May or Godyn's Bay. What is now known as the Lower Bay. Bayles, p. 47.

Prince's Bay. On Faden's map, 1779. On map, 1797, and later maps. The name is given "Princess Bay" on chart, U. S. Coast and Geodetic Survey, and on the map in Bayles' History, which was copied therefrom.

Raritan Bay. At the mouth of Raritan River. Chart, U. S. Coast and Geodetic Survey. Map in Bayles' History.

Achter Cull. Corrupted into Arthur Kill. Same as Staten Island Sound. Clute, pp. 16, 234. Bayles, p. 3. A report of the speech of Pennekek, Sachem in Achter Col (Elizabethtown) is given in Valentine's Manual for 1863. This Pennekek seems to have been a most important Indian and often figures in the treaties made from 1649 to 1655.

Het Kill van het Cull. Old Dutch name for the Kill van Kull, meaning the stream of the bay. Bayles, p. 3. "River Kill Van Kull" is shown on map New Brighton Association, Surveyed 1835, filed 1836, No. 12. Also called "River Kill Van Kull" in the Staaten Islander, February 22, 1854.

POINTS AND COVES.

Duxbury's Point. Where the present ferry house is located at St. George. Faden, 1776 and 1779. Bew, 1781. Bayles, p. 395. Clute, p. 461. Abstract of Title, Thos. E. Davis, 1834, pp. 11, 44. Faden and Bew call it "Ducksbury Point."

Brighton Point. Same as Duxbury's Point.

Vanderventer's Point. Located at or just outside of the Narrows. Faden, 1776 and 1779. Clute, p. 229.

Eagle's Nest Point. In an indenture dated February 3rd, 1756, "Between Jacob Bergen of Old Town, Husbandman, Johannes Van Wagenen, Wheel-wright, Cornelius Kroesen and Daniel Corson Esq all of Staten Island in this County of Richmond and in the Colony of New York, Surviving Executors of the last Will and Testament of

Jacob Bergen late of Staten Island aforesaid in the sd County of Richmond, Gentleman Deceased, of the one Part and Capt. John Keteltas of the City of New York Merchant, of the other Part," occurs the following: "And also a little Lot of Salt Meadow at Eagle's Nest Point on the West Side of Peter Nowee's Land, to the said Lott of Land belonging or appertaining, which said Premisses was formerly conveyed by the said Mary Brittain unto her son Nathaniel Brittain, as by an Instrument in Writing under the hand and Seal of the said Mary Brittain unto him the sd Nathaniel Brittain, Dated the 23 Day of Feby Anno Dom. 1685-6, Reference being thereunto had may more fully and at large appear." The land belonging to Peter Nowee's or Peter New, as he was often called, was just west of the southerly reach of the Old Town Road after leaving the present Richmond Ave. This would fix the location of Eagle's Nest Point on the edge of the meadows below Linden Park and near Old Town or Pole Creek. The eagle's nest was no doubt built by a fish hawk or sea eagle.

Great Kill Point. At Giffords. Once called Brown's Point and now often spoken of as Crooke's Point. Jos. Brown is given as a resident by Dripps, 1850. On map, 1797, it is mentioned as a "Beach of Sand."

Fountain's Point. In Great Kill. Immediately west of the mouth of Lockman's Creek. (See Lockman's Creek.)

Long Point. In Great Kill. West of Fountain's Point and immediately west of the mouth of Duck Creek. (See Duck Creek.)

Canavello's Point. In Great Kill. West of Long Point. Named after C. A. Canavello.

Monee's Point. On Smith's map of 1836 this name is placed opposite the shore lying between Arbutus Lake and Seguire's Pond. On the very small map of the Island, published by Eddy, 1812, the name is also given. It is probably a corruption of the family name of Manee.

Seguire's Point. The first point to the east of Prince's Bay.

Ward's Point. Near Tottenville. Still called by this name. On the map of 1797 the position of Caleb Ward's house is shown.

Butler's Point. An occasional name for Ward's Point.

Billogg's Point. At the western end of the Island. Faden, 1779. Proceedings, Natural Science Association, Vol. III, p. 54. Clute, pp. 100, 103, Bayles, p. 3.

Ellis' Point. First point northwest of Kreischerville.

Storer's or Hughes' Point. A short distance to the north of Ellis' Point. The line fence between the Storer and Hughes farms extends to this point. Sometimes called Story's Point.

Smoking Point. The first point southwest of Rossville. Land Papers, April 5th, 1684. So called on recent maps. "Smoaky Point" of Bew, 1781. " * * * a place called Smokers point" is mentioned in Land Papers, 1702. "Daniel Perrine of Smoking Point" is mentioned in a mortgage recorded at Richmond, Liber B p. 92.

Cedar Point. Often mentioned in the Land Papers, of which the following is a sample: "80 acres of land lying upon the northwest side of Staten Island, with 3 acres of meadow fronting, and 7 acres of meadow at ye west end of ye Island of meadow, against Seadar Poynte, laid out for Elias Puddington." 1676. The "Island of Meadow" lies at the mouth of Fresh Kills.

Never Fail Point. The extreme point of Karle's Neck where Main and Richmond Creeks meet. It is called Never Fail Point because the oysters planted in its vicinity are always good.

Cedar Bush Point. On the north side of Richmond Creek and not far from Never Fail Point.

First, Second and Third Points, or Uncle Ike's Points. On the north side of Richmond Creek and southeast of Cedar Bush Point.

Turtle Point. Not far from the site of the old Fresh Kills bridge.

Point No Point. On Long Neck near Island Creek and nearly opposite the mouth of Peter's Creek. When viewed from a distance there appears to be a considerable point at this part of Main Creek, but upon a nearer approach the point is not apparent. This is due to the gradual bend of the shore, which leads the boatman in a wide curve about what is in consequence named Point No Point.

Du Puy's Point. The southerly point at the mouth of Peter's Creek.

Long and Short Points. Parts of the irregularly shaped peninsula of meadow lying between Dock and Flowk Creeks on Karle's Neck. Long Point is the farthest west.

Robbin's or Winant's Point. At the mouth of Dock Creek and southeast of Freeman Winant's Swamp. Capt. Nathaniel Robbins was a notorious individual who resided many years ago in New Springville and after whom Robbins' Corner was named. He rendered considerable assistance to the British quartered on the Island during the Revolution. Clute, p. 114.

Black Point. "116 acres, situated on the northwest side of Staten Island and known by the name of Black Poynt, laid out for John Tunisson, by Phillip Welles, surveyor." Land Papers, 1680. Probably near Old Place.

Steep Point. Projects into Staten Island Sound between Old Place Creek and Mark's Creek. Some of this point has been dug away in order to make the Sound more navigable.

Lambert's, Collyer's or Bowman's Point. The point of Staten Island nearest to Elizabethport, New Jersey. Called Lambert's Point during the Revolution and later Collyer's Point. Map of property at "Bowman's Point" was made in 1869. In the Richmond Republican of October 9th, 1830, there is an advertisement of an auction sale of a piece of land, "Bounded northerly by the road leading from Mersereau's Ferry to the Old Point."

DeHart's Point. The first prominent point east of Bowman's and a part of the old DeHart farm. The knoll of upland at the end of the Shore Road, near Holland Hook meadows, is said to have also been called DeHart's Point (Bayles, p. 3,) but this seems to be an error.

DeHart's Cove. East of DeHart's Point. Usually called Johnny DeHart's Cove.

Peggy's Point. Southwest of the railroad trestle near Western Avenue. It is a point of higher land in the meadow. Peggy's Point is named after Judge David Mersereau's sister who married a Post. Judge Mersereau was prominent on the Island during the first part of this century. A man by the name of Page bought Peggy's Point and the surrounding meadows, and when he became old and decrepit he deeded the land to his relatives in consideration that they take care of him for the remainder of his days. Their care taking, however, according to the neighbors, was of a very poor quality, and the old man finally died in the wood shed.

Beulah. The sandy point or dune that extends along one side of Old Place meadow reaching northward nearly to Old Place Creek. Though termed Beulah in a spirit of irony, to a naturalist it is well named and is anything but desolate. Also known as the Big Hummock.

Spear's or Spirit Point. A point of slightly raised upland projecting southwestward into the meadow near the head of Old Place Creek. Mrs. Prior, wife of Andrew Prior, the first miller of Old Place mill, committed suicide by jumping into the creek at this point. It is sometimes called Spirit Point.

Mersereau's Point. An old name for the point at what is now Port Richmond, to which Mersereau's Ferry ran. Minutes of the Common Council, July 21, 1823.

Upper or Pelton's Cove. At the Bend in the Shore Road between Davis and Bement Avenues.

Lower Cove. Located near the foot of Lafayette Avenue, New Brighton. An old name.

Butler's Cove. At Ward's Point near Tottenville.

The Cove. East of Butler's Cove, on the edge of the "Meadows" and the "Cedars."

Woglom's Cove. Between Smoking and Ellis' Points on the Sound.

Ross' Cove. The bend in the shore at Rossville near the old Ross (now C. Lyon) homestead. Winant's or Ross' Brook flows into this Cove.

KILLS, CREEKS AND BROOKS.

Brook St. Brook. Once flowed to the bay at the Watering Place—the present Tompkinsville—a pure stream, but now a dirty, garbage transporting torrent in wet weather, and dry in summer. Mentioned in the Abstract of the Title of Thomas E. Davis to certain Lands in Castleton, p. 11, (1834) as "the creek which flows through the Marine Hospital ground."

Jersey St. Brook. Once the overflow of the Hessian Spring but now in the same condition as the Brook St. Brook. (See Hessian Spring.)

Gore's Brook. Rose near the head of Vanderbilt Ave., flowed through the Gore farm and emptied at Stapleton. Once a well known brook.

New Creek. At South Beach. Many years ago a creek emptied near the Narrows following nearly, if not the same course as the present Old Town or Pole Creek.* The mouth of this old creek became closed and New Creek was opened—hence the name. This must have happened previous to the making of the map in 1797. Not many years ago, the Boulevard was built a little up from the high tide mark and New Creek was bridged, but in many places owing to the washing away of the shore only a trace of the road remains. New Creek is very erratic as regards at least a portion of its course, and for many years previous to the winter of 1883-84 emptied a considerable distance to the southwest of its present mouth. There was a point formed which each year grew longer, until at last the stream flowed so slowly that in the winter mentioned it froze, and the upland became flooded. When spring came the water broke through straight to the ocean, and now another point is being slowly formed. In 1797 the creek is portrayed as emptying straight to the ocean, without any accompanying point, but on the maps of 1850, 1859 and 1872 the point is shown.

Old Town or Pole Creek. North east branch of New Creek. The brook which is the head waters of this creek, rises near Sand Lane at the Old Town, and flows parallel to South Beach.

Perine's Creek. A north branch of New Creek. The brook from Van Wagenen's Pond, or Woodside Lake, flows into this creek.

Barton's or Seaver's Creek. A northwest branch of New Creek. The brooks from Reed's and Mersereau's Valleys, after joining, flow into this creek.

Barnes' Creek. A westerly branch of New Creek, into which the Moravian Brook flows.

Tyson's Creek. "Petition of Obediah Holmes, for a warrant to survey and lay out a certain piece of land lying in the county of Richmond, adjoining to the land of the petitioner, upon the head of Tyson's Creek." Land Papers, 1686.

Taylor's or Moravian Brook. Rises in the swamps northeast of the Woolsey Pond on Todt Hill and flows through the Moravian Cemetery and the old Taylor farm into Barnes' Creek, a branch of New Creek. Report Staten Island Improvement Com., p. 46.

Stony Brook. The brook from which Stony Brook settlement probably got its name, is difficult to locate at present. It may be the brook, now usually dry, that flows southward across the Amboy Road toward Great Kill, or possibly it is the same as Richmond Brook. (See Bridge Creek.)

Creek of Granees. "Description of a survey of a lot of land lying upon the south side of Staten Island, with 5 acres of meadow adjacent to ye creek of Granees, and 5 acres of moore to ye north east of Seadar Poynte, laid out for Theo. Davison." Land Papers, 1676.

Pyse Creek. "Communication of Stephen Hesiott to the governor in relation to a certain piece or parcel of land on Staten Island, at the head of Pyse Creek, next adjoining to Peter Johnson and Wm. Johnson's lots." Not dated but placed in the Land Papers between Jan. and March, 1684.

Muddy Ditch. Near the Mill Road at Oakwood. "B'n N. by Mill road, E. by land of A. S. or A. V. Connor or A. O'Connor, S. by beach and bay of New York and W. by Muddy Ditch. 8 acres." Advertisement, State Tax Sale, Dec., 1890.

Great Kill. Mentioned in the Land Papers in 1676; on Map of 1797 and on all later maps.

Bass Creek. At Great Kill. On Map of 1797 and later maps, but now nearly obliterated by the subsidence and washing away of the beach. This name is also applied to a branch of Main Creek and to a small creek on the Sound between Hanne's and Mark's Creeks.

Mill Creek. At the head of Great Kill. Smith, 1836. Dripps, 1872. The creek on which Lake's tide mill is located. Its upper part is called Holmes' Creek.

Flat Creek. Small creek between Mill and Lockman's Creeks. Smith, 1836.

Lockman's Creek. Next large creek west of Mill Creek. A small creek near by, rarely shown on maps, is called Flat Creek. Lackaman's Creek is shown by Smith, 1836.

Duck Creek. Next creek west of Lockman's. Smith, 1836.

Wolfe's Brook. Flows into Wolfe's Pond, which lies northeast of Seguine's Point.

Lemon or Seguine's Creek. Empties into Prince's Bay to the west of Seguine's Point. Seguine's Creek is mentioned in Richmond Republican, April 24th, 1830.

Little North River. A name for Lemon Creek which lies north and south. It is mentioned in a deed as the west boundary of the old Seguine farm. The Prince's

Bay Road leading to Seguire's Point, was once the private lane to the homestead. The "Richmond Co. Herald," for June 1st, 1895, records the fact that a large number of tomcod and smelt from the United States fish hatchery had been placed in the "Little North river at Prince's Bay."

Sandy Brook. Rises to the northeast of Wood Row Road and empties into Lemon Creek. Named on Map, 1797.

Jack's or Butler's Creek. Butler's Brook flows from Brown's Pond, near Light House Hill, into Butler's Creek at Prince's Bay. In recent years the creek has been improved and is now usually spoken of as the Canal. Black Jack Ward, a negro in the service of the Butler family for many years, once lived near by and the creek at that time generally bore his name.

Uncle Ed. Wood's Brook. Rises on the Wood property close to St. Paul's Church on the Amboy Road, and flows southerly to the Cove, east of Ward's Point.

Mill Creek. Extends from Richmond Valley Station to Staten Island Sound. Map in Bayles' History.

'Gene's or Tappen's Creek. Northwest of Kreischerville. Named after Eugene Androvette. On the map of 1797 it is called Tappen's Creek, and the older residents also know it by that name. Asher and Abraham Tappen are mentioned on old grave stones in a homestead burying ground, just south of the creek.

Oakley's Creek. A small creek on the easterly side of Smoking Point.

Ross' or Winant's Brook. Rises between Shea's and Winant's Lanes and flows into Ross' Cove at Rossville.

Killi-fish Brook. Flows from Mt. Tobey, the Lyster Pond, &c., and empties into Slaght's Creek at Valley Forge. Another branch rises more to the northeast.

Slack's (Slaght's) Creek. First Creek north of Rossville. One branch reaches the Fresh Kills Road at Valley Forge.

Benedict's Creek. Second creek north of Rossville. The Benedict farm fronts the Fresh Kills Road and extends on to the meadows at Benedict's Creek. This is said to have been formerly known as Winant's Creek.

Moore's or Keteltas' Brook. Rises in the woods near Journey Road and flows across the Fresh Kills Road through Owl's Hollow into Wagner's Creek.

Dead Man's Creek. On Dead Man's or Burnt Island. Empties into Little Fresh Kill.

Fresh Kills. Mentioned in Land Papers, 1676; on map, 1797, and on all later maps.

Little and Great Fresh Kill. Fresh Kills divides at Burnt Island, which lies at its mouth, the northern arm being known as Little Fresh Kill, and the southern as Great Fresh Kill.

Jesse Bedell's or Wagner's Creek. First southerly branch of Fresh Kills, after passing Burnt Island. It bends about Lake's Meadow Island,

Richmond Creek. East branch of Fresh Kills. Karle's Neck Creek or Mich-eau's Creek are old names for this.

Henry Bedell's Mill Creek. A branch of Richmond Creek leading to the old Bedell Mill at Marshland, or Green Ridge.

Betty Holmes' or Taylor's Brook. Rises near Annadale and flows northerly into Benham's Creek, a branch of Richmond Creek.

Benham's Brook. Report Staten Is. Imp. Commission, p. 91. Same as Betty Holmes' Brook. Flows into Benham's Creek, a branch of Richmond Creek. On the Fresh Kills Road between Betty Holmes' or Benham's Brook and Gifford's Lane, is the haunt of Rooney's ghost. Willows grow on both sides of the road and holes have been cut into their trunks and rails fitted between the trees, thus making them serve as fence posts. A small stream flows along the road side by the willows, and Rooney, who was not considered a prohibitionist, fell into this little two inch brook and was drowned. His ghost now prowls up and down the road, and, according to a reliable neighbor, a pony that was often driven about the vicinity used to cut most curious capers, when beneath the shade of the willows.

Lewis' Creek. An old name for Benham's Creek.

Richmond or Saw Mill Brook. Flows through the ravine at Egbertville and empties into Richmond Creek near St. Andrew's church. The Blood Root Valley branch rises near the highest point (Dongan Knoll), and the west branch rises in the Mills Dale.

Ketchum's Mill Pond Brook. Rises in the Mills Dale near the old road to Richmond, now sometimes called Egbertville Road, and flows through the Ketchum Mill Pond into Richmond Creek. This brook and its branches have been only slightly affected by artificial changes and are among the most rural on the Island.

Simonson's Brook. Rises in the woods to the north of Springville Road (Poverty Lane), near the center of the Island, and flows southerly into Simonson's Creek, a branch of Richmond Creek.

John Bedell's or Simonson's Creek. Empties into the north side of Richmond Creek opposite Benham's Creek.

Main Creek. North branch of Fresh Kills.

Neck or Long Neck Creek. The branch of Main Creek into which Willow Brook flows. Map, 1797. Adv. State Tax Sale, Dec., 1890. Smith, 1836, calls it "Beck Creek."

Dock or New Springville Creek. Branch of Main, and next considerable creek southeast of Neck Creek. The one in which New Springville dock is located.

Vreeland's Creek. A branch of Dock Creek into which Vreeland's Brook flows.

Esek's Creek. Branch of Dock Creek; also known as Blake's Creek.

Flowk Creek. Branch of Main, and next creek southwest of Dock Creek. Mentioned in *Richmond Republican*, Jan. 24, 1829. There is also a creek southeast of Travisville known as Long Neck Flowk or Little Flowk Creek. These creeks were no doubt named after the fish allied to the flounders, known as the flowk or fluke. The true flowk is a European fish. The present day fishermen do not know why these two creeks are so called, but the above explanation seems probable.

Peter's Creek. Branch of Main, and next creek southwest of Flowk Creek. Named after Peter Du Puy. "Peter Dupuy's Creek" is mentioned in *Richmond Republican*, January 24th, 1829.

Prall's Creek. The south arm or branch of Peter's Creek.

La Tourette's Canal. Extends from Peter's Creek northeastward to the upland.

Bass Creek. Small creek between Peter's and Flowk creeks.

Flat Creek. A branch of Richmond Creek and near Never Fail Point.

Wreck Creek. On Long Neck. Empties into Fresh Kills near Burnt Island. So called because an old wreck was once lodged there.

Factory Creek. Next creek west of Wreck Creek. Extends toward the Linoleum factory.

Fork Creek. A forked creek on Long Neck that empties into Fresh Kills to the east of Wreck Creek.

Marshall's Creek. Next considerable creek to the east of Fork Creek. Sometimes called Marsh Creek.

Island Creek. On Long Neck near Price's Meadow Island. Empties into Main Creek east of Marsh Creek. Peter's Creek on Karle's Neck is nearly opposite. Sometimes called Shrimp Creek.

Little Flowk or Jones' Creek. Branch of Main Creek; the one that bends toward Price's Meadow Island from the northeast.

New Springville Brook. Rises near the corner of the old Saw-Mill or Conner Road and the Manor Road, and flows across Jones' or Rockland Road through New Springville into Dock Creek. This brook once turned a mill wheel in New Springville village.

Vreeland's Brook. Rises near Sign's Road and flows southwesterly through Vreeland's Swamp at Union or New Springville Road into Vreeland's Creek, a branch of Dock Creek.

Willow Brook. Rises near the highest point of Staten Island and flows southwesterly into Main Creek.

Corson's Brook. Rises near the Willow Brook Road, flows through the Corson farm and empties into Willow Brook near Bull's Head. Beers, 1874.

Cannon's or Landing Creek. Lies between Chelsea and Travisville. Andrew Cannon is mentioned as having 161 acres on Long Neck in the Land Papers, 1686. Abram Cannon's Creek is mentioned by Bayles, p. 129. Named on map 1797. Lately called Chelsea Creek.

Liberty Ditch. Cannon's Creek, like most meadow creeks, contains several lengthy twists or turns, and in 1860, or thereabouts, when a piece of the meadow was purchased for manufacturing purposes, a short cut was made across one of these loops, which, from the spirit of the times, received the name of Liberty Ditch.

Saw Mill or Maggie Merrill's Creek. North of Chelsea. One of its branches crosses the Watchogue Road. A saw mill was formerly located on this creek.

Flat Brook. Flows through the low, flat woodland lying between Merrill's Road and the Turnpike into Saw Mill or Maggie's Creek. (See Flat Brook, a branch of Old Place Creek.)

Daddy's Creek. On the Sound. Next creek north of Saw Mill Creek.

Hanne's or Ball's Creek. On the Sound. Next creek north of Daddy's.

Bass Creek. On the Sound. Small creek next north of Hanne's Creek.

Prall's River. The arm of the Sound between Dongan's Island and Staten Island. Advertisement State Tax Sale, 1895.

Thomas' Creek. Mentioned in Bayles' History, p. 129.

Mark's Creek. First large creek south of Old Place Creek. Empties near Buckwheat Island. Mentioned in advertisement State Tax Sale, 1895.

Old Place or Tunissen's Creek. Old Place Creek is shown on recent maps. Sometimes called "Tunis Creek" by fishermen, &c. Tunissen's Creek is mentioned in *Richmond Republican*, April 25th, 1829; in the *Staten Islander*, Sept. 19th, 1857, and in an old deed of 1687, recorded in Richmond, Liber B, p. 95.

Oyster or Deep Creek. A north branch of Old Place Creek, that reaches nearly to Bridge or Lawrence Creek. Oyster Creek is mentioned in advertisement State Tax Sale, 1895.

Oyster Creek. "Petition of Hans Lawrence of the county of Richmond, praying a warrant for a survey of a piece of land on Staten Island, containing about 40 acres; together with a small island of meadow, of about 2 acres, lying at the mouth of Oyster Creek, for which he has a patent." Not dated, but placed in 1697 of the Land Papers.

Sedge Pond Creek. First southerly branch of Old Place Creek.

Vroom Creek. Second southerly branch of Old Place Creek. Walling, 1859. Advertisement State Tax Sale, 1895.

Huckleberry Creek. Third southerly branch of Old Place Creek. Reaches to Beulah Point.

Braisted's Creek. A southerly branch of Old Place Creek, that reaches to that part of Lambert's Lane sometimes called Bloomfield Road.

Flat Brook. Flows north across Lambert's Lane into Old Place Creek. (See Flat Brook, a branch of Saw Mill or Maggie's Creek.)

Log Brook. Flows westerly across South Avenue into Old Place Creek. A few logs once laid across the brook and served as a bridge, hence the name.

Old Place Brook. Rises near Quarry Hill on the Old Place Road and flows across South avenue into Old Place Creek.

Lawrence or Bridge Creek. Said to have been also called Back Creek because it lay back of some of the farms that fronted on the North Shore. It empties into the Kill Van Kull at Bowman's Point. The brook, that flows into the south branch of this creek is sometimes called Stony Brook, because in old days it was crossed by stepping stones instead of logs.

Bridge Creek is mentioned in connection with the war of the Revolution as follows: "It is imagined that another expedition is determined upon against Staten Island under command of Mr. Philemon Dickenson, who has assembled near four hundred men about Elizabeth Town; boats and scows are also prepared, with a floating raft, to cross Bridge Creek, and thereby secure a retreat to the point." Bayles, p. 196. Also mentioned in Adv. State Tax Sale, Dec., 1890.

Is is related, that in one of the raids on Staten Island during the war of the Revolution, Jacob Van Pelt was taken prisoner and was being borne across Bridge Creek meadows away from his home and faithful wife, who is said to have been about four feet tall. Though a dwarf in stature, she was valiant of spirit, and accordingly followed her husband with the family musket, shooting one of his captors and putting the others to flight. Thus did this wife indeed get the "old man" back again.

Dam-meadow Creek. A branch of Bridge Creek. The Dam-meadow and Dam-meadow Creek are crossed by the railroad trestle just beyond Arlington. The meadow

is nearly encircled by higher land, covered with a growth of timber, and owing to this isolation has also been called the Pond-meadow. It is bounded on the southwest by Peggy's Point.

Newton's Creek. Empties into the Kill Van Kull between Bowman's and DeHart's Points. Many years ago a man by the name of Newton widened this creek so that he might get boats up to his ketchup and pickle preserving establishment, situated near the Shore Road.

DeHart's or Bowman's Brook. Bends about the high sand dune or Gerty's Hill at Holland Hook, and flows into Newton's Creek. Near the bridge where DeHart's Brook crosses the Shore Road, Suckey Rowland was caught by the Devil many years ago and had her tongue pulled, that is Suckey always claimed that it was the Devil. She was a gossip and her stories with oft telling grew apace, so that her good neighbors became angry with this monger of tales whose tongue was so very long. Thus it came to pass that the Devil, in looking about Holland Hook one night to see what pranks he might cut, espied Suckey and her very long tongue, which he pulled until she screamed. He by chance did a good act on that occasion, for it is related that Suckey's statements thereafter would have satisfied the most careful historian.

Palmer's Run. The brook forming the boundary line between Castleton and Northfield, and named after John Palmer. Land Papers, 1680. Bayles, p. 113.

Mill Brook. Same as Palmer's Run. Land Papers, 1680. Bayles, p. 113. Now called Bodine's Creek.

Great Swamp Ditch. An old water way. It formerly conducted water from Willow Brook at Bull's Head to the Butcherville branch of Palmer's Run.

Stinking Brook. A branch of Palmer's Run, that crosses the Turnpike and receives the waste of the Four Corners' brewery. At this writing, it is a foul smelling brook, remarkable for its growth of *Algæ* and *Vorticellæ*.

Clove Valley Brook. Flows from the Clove Valley ponds to Palmer's Run at the Mill Pond meadow, West New Brighton.

The Canal. Dug from the Clove Valley Brook to the Factory Pond at West New Brighton. Abandoned in 1894 and now being filled in.

Boiling Spring Brook. Flows into the Factory Pond. (See Boiling Spring.)

Logan's Spring or Harbor Brook. Flows into the Kill Van Kull at Livingston. (See Logan's Spring.) "The stream known as Harbor Brook, on Henderson Avenue, at the premises of the Sailors' Snug Harbor," is mentioned in an advertisement in N. Y. Evening Sun, Sept. 12th, 1895.

NECKS.

The Neck. Tottenville is sometimes referred to as being on "the Neck."

Karle's Neck. "Description of a survey of 80 acres of land at ye head of ye meadows between Long Neck and Karle's Neck, upon Staten Island, with 6 acres of salt meadow and 4 acres of fresh in ye cove to the north of Seadar Poynte, laid out for Jon. Bissell." Land Papers, 1676. St. Andrew's church is described as being on Karle's Neck, at the head of Fresh Kilis, in the Land Papers, 1713, and in Bayles' History, p. 395. "Charle's Neck" is mentioned in Bayles' History, p. 129, and is shown by Smith, 1836. Karle's Neck was sometimes called Short Neck to distinguish it from Long Neck.

Long Neck. Separated from Karle's Neck by Main Creek. The land on which Linoleumville now stands. Mentioned in the Land Papers in draught of patent granted to John Garretsen in 1675.

Daniell's Neck. "Description of a survey of 120 acres of land lying upon the west side of Staten Island, to the north of Long Neck, and to the south of Daniell's Neck, laid out for Jonsia Cronsoon, by Phillip Welles, Surveyor." Land Papers, 1685. Mentioned again in 1697 in connection with the petition of Richard Merrel; also in Bayles' History, p. 129.

Tunissen's Neck. An old name for the Neck between Old Place Creek (Tunissen's Creek) and Bridge Creek. Old Place is located on this Neck.

ISLANDS AND MEADOW-ISLANDS.

Louse Island. When the Quarantine was situated at Tompkinsville the washing for the immigrants was carried on in the "wash house" on Louse Island. In building the American Docks, Louse Island and the vicinity were filled in. The Island is shown but not named on Blood's Map, 1845.

Hoffman Island (Upper Quarantine). Swinburne or Dix Island (Lower Quarantine). Artificial islands off the shore from South Beach.

Tom Bell's Island. A wooded point projecting into the meadows between Garretson's station and the South Beach on the southwest side of Seaview Avenue. Sometimes called Tom Bell's Woods. This wood is said to have been much frequented by foxes about fifty years ago.

Poppy Joe's Island. A meadow island covered with cedar trees, between Barnes' Creek and South Beach. This name is used in old deeds. The sandy beach is approaching this island quite rapidly. In the *Richmond Republican*, June 19th, 1830, the following mention is made of "Poppy Joe's Island, which formerly did belong to Thomas Walton, deceased, and the said Thomas Walton did convey the same to Isaac Cubberly, of Staten Island, deceased, and the said deceased Isaac Cubberly, did bequeath the same in his last will and testament to his son Isaac Cubberly, his heirs and assigns for ever, which said tract of land and salt meadow lying on the south side of the said Island, and fronting the beach or strand, and begins on the north side of the said tract of land and meadows, by a creek called the New Creek. * * *" "Poppa Goes Island" is depicted on an old map of which the following is the title: "At the Request of Doctor Nicholas Lozier I have Surveyed All His Lands and Meadows now in his Possession And find the Contents to Amount of 141 Acres of Land and Meadows as p. Mapp. Surveyed Jan'y, 12th, 1793, by Bernard Sprong."

Egypt. A meadow island between Barnes' and Bartons' Creeks, southwest of Grant City.

Oyster Island. In Great Kill. Shown but not named on Chart, U. S. Coast and Geodetic Survey. Named on Dripp's Map, 1872.

Burnt Island. On the 10th of June, 1778, three boats laden with American soldiers landed between Blazing Star (Rossville) and "Burnt Island" in the mouth of Fresh Kills, and surprised the British picket. Bayles, p. 202. This island is referred to several times in the Land Papers as "Ye Island of Meadow against Seadar Poynte." On the map of 1797 it is marked "Island of Salt Meadow."

Dead Man's or Noah's Island. Same as Burnt Island. These names are used by fishermen of the present day.

Edsall's Island. "Description of a survey of several small pieces of salt meadow, on the northwest side of Staten Island, near the Fresh Kills, beginning at the southernmost branch of the Fresh Kills, where it joins the sound; thence southward to Jacob de Muffes his creek, including a peninsula of meadow called Edsall's Island, laid out for Christopher Billip, by Ro: Fulerton." Land Papers, July 6, 1687.

Lake's Island. Mentioned in advertisement, *Staten Islander*, Sept. 9, 1857. The rise in the meadow to the east of Burnt or Dead Man's Island and probably the same as Edsall's Island. Thoreau in a letter written on Staten Island, July 21, 1843, says: "Last Sunday I walked over to Lake Island Farm, eight or nine miles from here, where Moses Prichard lived, and found the present occupant, one Mr. Davenport, formerly from Massachusetts, with three or four men to help him, raising sweet potatoes and tomatoes by the acre." Possibly the "Lake Island Farm" of Thoreau is not Lake's or Edsall's Island.

Price's Island. A hummock of land in the salt meadow south of Travisville on Long Neck. E. Price is given as a resident by Dripps, 1850.

Dongan's Island. Large island of meadow in the Sound near Chelsea. On Dripp's map of 1850 it is marked Dongan's Island, but on the later maps it is corrupted into "Duncan's Island." Called Prall's Island on map in Bayles' History. The "great island of salt meadow, near the Fresh Kills, and opposite to Long Neck, laid out for John Palmer by Phillip Wells, surveyor," is mentioned in the Land Papers in 1687, and is Dongan's Island. The patent to Palmer was approved at a council held March 31st, 1687, Governor Dongan being present, and on the 16th day of the following April, John Palmer and Sarah, his wife, conveyed the same territory to Thomas Dongan. Nearly opposite to this Island on the New Jersey shore, are the "Rotten Meadows."

Ralph's Island. The following is from the "Mirror" of 1838: "Executors Sale. James Bodine Sen'r deceased. * * * * Also two lots of salt meadow, No. 1 containing 10 acres, situated in the town of Northfield in said county at a place called the 'Old Place,' bounded south by Tunison's Creek, on the west by meadow of Wm. Blake, on the north by upland of Mrs. Prior, and on the east by meadow of Jacob Bodine, conveniently situated and of a good quality. No. 2 containing 4 acres, situate as aforesaid, being on the opposite side of the said creek, and nearly surrounded by water—called 'Ralph's Island.'" This meadow-island lies south of Mr. Kinsey's residence on the Old Place road, and is no longer surrounded by the creek, which has changed its course. It is, however, still a meadow-island, as the former bed of the creek is not entirely filled up, but supports a rank growth of water-loving vegetation, that in summer encircles this small piece of meadow.

Buckwheat Island. Small meadow-island in the Sound north of Dongan's Island. It is near the mouth of Mark's Creek: Clute, p. 8. It is related that a canal boatman ran ashore on this Island in the night, and in mentioning the accident, said he had grounded on "Pancake Island."

Schutter's, Shutter's, Shuter's, Suter's or Shooter's Island. Opposite Mariners' Harbor. Mentioned in the Land Papers, 1676. Bew, 1781. Richmond Co. Clerk's office, Liber B of Deeds, p. 63. Bayles, p. 326. Clute, p. 66. Walling, 1859. Beers, 1874.

REEFS, ROCKS, SHOALS, &c.

Robyn's Rift. "A reef in the bay at the mouth of the Kill Van Kull was once frequented by seals, to which the Dutch gave the name Robyn; hence the name

'Robyn's Rift,' which has, by careless usage, become 'Robbin's Reef.'" Bayles, p. 3, 681. Chart U. S. Coast and Geodetic Survey, Bay and Harbor of New York.

Oyster Banks. West of Robbins Reef, between Cavan's Point and Constable's Point, N. J. Bew, 1781, shows 'Oyster Bay and Banks,' and Des Barres, 1777, shows 'Oyster Banks.'

Baxter's Ledge. Between St. George and Robbin's Reef. Chart U. S. Coast and Geodetic Survey.

Law's Reef. The name applied to what remains of the old stone dock to the west of the present St. George Ferry slips, and at one time owned by Geo. Law.

Lightning Rock. A considerable mass of outcropping Tremolite on the shore near to where the present St. George ferry slips are located. The rock was much worn by the waves, a prominent crevice ran across it, and a large portion had been broken off, probably by glacial action, and transported several yards southward. It was the popular tradition that these changes had been brought about by lightning, hence the name.

Denyse's or Black=fish Rock. Near the shore at Brighton Point (St. George) and about three hundred feet east of Lightning Rock. The place was well known to fishermen some years ago, but has now been filled in.

White Rock. The name of the rock to which Isaac Decker piloted the first British soldiers, who landed on Staten Island during the Revolution. Bayles, p. 242. The outcrop of granite on the shore, now nearly covered by the filling in for the Tompkinsville railroad station, was called the White Rock during recent years, and it is quite likely the place where Decker landed the soldiers.

Split Rock. A large split rock seen at very low tide off the shore at the foot of Hannah Street, Tompkinsville.

Sugar Loaf Rock. A prominent boulder, the shape of a sugar loaf, near the paper factory, at the corner of Prospect Street and the Turnpike. It now occupies a cleared field, but was once surrounded by woods, and was then a point of pilgrimage for the boys of the period.

Brogan's Rock. A large flat rock on the shore south of Pennsylvania Ave., Clifton. Named after Brogan, a boatman.

Seal Rocks. The name of several drift boulders at Prince's Bay under Light House Hill, on which seals are occasionally seen in winter.

Nigger=Head Rock. A large boulder at the foot of the bluff at Light House Hill, Prince's Bay, and known as a land mark among fishermen.

Strawberry Rock. Off the shore near the foot of Central Ave., Tottenville. This rock received its name from the circumstance that strawberries once grew about it, before the shore had washed away.

Polly Fountain's or Jacobson's Bar. Just outside of the Narrows. The Jacobson and Fountain farms were at the Narrows and lay side by side. The bar is also occasionally spoken of as Keteltas', after the old Keteltas farm, that extended to the South Beach at the Old Town Road. Beers, 1874.

Craven's Shoal. Off South Beach, northeast of Hoffman Island. Chart, U. S. Coast and Geodetic Survey. Map, Bayles' History.

New Creek Shoal. Near the mouth of New Creek.

West Bank. Hoffman and Dix Islands east of South Beach are on West Bank. Chart, U. S. Coast and Geodetic Survey. Bellin, 1764. Bew, 1781.

Barnes' Lead. Off South Beach between New Creek and the Elm Tree Light at the foot of New Dorp Lane.

Great Kill Shoal. Southeast of Crooke's Point. This is what is called Old Orchard Shoal on the government chart (Great Kill Shoal not being mentioned), but according to oystermen, &c., the true Old Orchard Shoal is further to the west nearly opposite Huguenot. The Old Orchard, now washed away by the ever encroaching sea, is said to have been situated just west of Arbutus Lake. "Kill Shoal" is shown by Smith, 1836.

Old Orchard Shoal. The Old Orchard Shoal Light is situated a little over two miles southeast of Crooke's Point. Chart, U. S. Coast and Geodetic Survey. (See Great Kill Shoal.)

Middle Ground. The shallow area south of the channel at Prince's Bay. So called by oystermen, &c.

Round Shoal. A name for Middle Ground, or at least its upper portion. Chart U. S. Coast and Geodetic Survey.

Oyster Beds. Same as Middle Ground and Round Shoal. Smith, 1836.

Texas. Southeast of Ward's Point, between the channel and Middle Ground. The water is several feet deeper than on Middle Ground. A well known locality among fishermen, &c.

Mill Creek Shoals. In the Sound at Mill Creek, Tottenville.

Kreischerville Flats. In the Sound off Kreischerville.

Big, Great or Storer's Beds. The Great Beds Light is situated southwest of Ward's Point. Chart U. S. Coast and Geodetic Survey. Fishermen call the wide and shallow part of the Sound north of Ellis Point, Great Beds, Big Beds or Storer's Beds.

Story's Flats. Mud flats in the Sound between Ellis and Smoking Points. Chart U. S. Coast and Geodetic Survey. These flats should be called Storer's after the old Staten Island family of that name who owned the upland.

Lewis' Beds. Oyster beds in Lewis' or Benham's Creek.

Perine's Hole. A deep place in Perine's Creek, a branch of New Creek.

King-fish Hole. Situated off Elm Tree Light. Known to fishermen by this name because the King-fish or Barb sometimes occurs there in great numbers.

Deep Hole. In Prince's Bay. Seventy-four feet deep. Another deep hole is in the Sound near Tottenville, and is forty-eight feet deep. Still another deep hole is just below where the Fresh Kills bridge crosses Richmond Creek.

Shannon's Hole. A deep place in the Sound between Slack's Creek and Benedict's Creek.

Garretson's Bar. Near (above) where the old Garretson or Fresh Kills Bridge crossed Richmond Creek.

Sea-dog Shoal. Situated near the northerly end of Dongan's Island. Shown, but not named, on map 1797.

HILLS.

Fort Hill. The hill crossed by Westervelt Avenue, New Brighton, and named from the several British forts located thereon in Revolutionary time. Clute, p. 93. Mentioned in advertisement State Tax Sale, Dec. 1890. Map of property at Fort Hill, Staten Island, filed 20th July, 1853. No. 116.

Quality Hill. An old nickname for Fort Hill, applied to it by the residents of Thrifty Valley. Dutch Hill is a more recent name.

Goat Hill. An old name for Fort Hill. The unfenced portion was formerly used as a goat pasture.

Vinegar Hill. The southerly slope occupied by Monroe and Montgomery Avenues, New Brighton. This was also known as "The Orchard," because Gov. Tompkins' apple orchard was located there. "The Orchard" is shown on Blood's map, 1845.

Cork Hill. A later name for Vinegar Hill. The Cork Hill boys and the boys from Rocky Hollow used to march against each other some years ago and indulge in "Wild Irish" stone fights. They were imbued with an excess of local pride.

Redoubt Hill or Mount Tompkins. The prominent hill back of Tompkinsville, on which a British earthwork was located during the Revolution, the remains of which are still to be seen. "The Pavilion at Mount Tompkins" is mentioned in advertisement by Caleb T. Ward in *Richmond Republican*, March 1st, 1828. Mount Tompkins is mentioned in the *Staaten Islander*, June 11th, 1856. Redoubt Hill is mentioned in the *Staten Island Star*, Dec. 14, 1895.

Pavilion Hill. The same as Mount Tompkins. A great Sunday resort thirty or forty years ago. Called "Mount Pavilion" in advertisement in N. Y. *Herald* of 1835. Blood, 1845. Now occasionally called Cow Hill.

Ward's Hill. The next hill southeast of Pavilion.

Mount Marion. Same as Ward's Hill. Blood, 1845.

Fiedler's Hill. Rises from the Turnpike west of Pavilion Hill.

Turney's Hill. At the present Hill Street, between Jersey Street and York Avenue, New Brighton.

Grimes' Hill. Rises from the Richmond Road back of Stapleton.

Capo di Monte. Old name for Grimes' Hill. Blood, 1845.

Signal Hill. An old name for Grimes' Hill. Rept. Staten Is. Imp. Com., pp. 45, 82, 88, 90. The British maintained a number of signal stations on the Island during the war of the Revolution, one of which was located on this hill.

Schaefer's Hill. The steep ascent at the top of Targee Street, Stapleton. A recent name.

Jackson's Hill. A recent name for the prominent hill rising from the Richmond Road opposite Osgood Avenue, Stapleton, and at present used as a common. It is a part of Grimes' Hill.

Pole Hill. Near Grimes' Hill. Now known as "Morning Side."

Boyd's Hill. An old name for the high ground along the Richmond Road near the head of Wright Street, Stapleton.

Prospect Hill. At the corner of Bay and Prospect Streets, Stapleton. On Blood's map, 1845. Now removed.

Hamel's Hoofden. The Narrows. "These Hoofden, or headlands, were named after Hendrick Hamel, one of the directors of the West India Company." Bayles, pp. 47, 83. Mentioned in 1630 in the Indian deed of the Island to Michil Pauw. Manual of the City of N. Y., 1869.

Little Fort Hill. Near the site of the present fort that commands the Narrows. Bayles, p. 259.

Concord Downs. This name has been applied to the large tract of naked, hilly land lying between the Finger Board Road and the Richmond Road. It was once covered with trees, that would grow again, if protected from the omnivorous goats, resident in Concord and vicinity. The same character of country, though wooded, extends to the Old Town Road. The Downs are now much used by golf players.

Fox Hill. Report Staten Is. Imp. Com., pp. 88, 90. Southwest of the present Rosebank railroad station. This and Mayer's Hill are the most prominent of the Concord Downs.

Mayer's Hill. The Finger Board Road bends about this hill. Beers, 1874.

Roguary Hill. A murder was once committed on a small elevation over which the Finger Board Road passes, and which from that circumstance received the name of Roguary Hill, and the road became known as the Roguary Hill Road, until the guide post, showing the road to Richmond, was erected, when it received its present name. Clute, p. 232. A continued story appeared in the *Staaten Islander* during January and February, 1854, entitled "The Stranger's Revenge; or, The Haunted Swamp of the Finger Board Road. An Historical Legend of Staaten Island, by a new contributor." The Roguary Hill murder figures as a feature of this tale. It is said that several robberies were also committed on the hill. Among "lands to be sold without reserve," mentioned in advertisement in *Richmond Republican*, March 21st, 1829, is "a farm containing 20 acres in the aforesaid town of Southfield, bounded on the road leading from Roguary Hill to the Narrows."

Todt or Toad Hill. Rises from the Richmond Road at Garretsons, the present Dongan Hills post office. It was not called Todt Hill before the Revolution, but the name began to be used during the latter part of the war. Bayles, p. 246. Clute, pp. 8, 226. In the *Staaten Islander*, for Aug. 30th, 1856, there is an article on the origin of the name 'Todt Hill.' It is there stated that in one of the early encounters between the Indians and the Dutch settlers several of the latter were killed on the hill, which in consequence received the name of Todt or Death Hill. In the next number of the paper a correspondent, writing from "Cockroach Alley, Snailville," declares the proper name to be 'Toad Hill' and relates this story: "In days of yore, a young man paid his 'distresses'—for so they were regarded—to a young lady who resided on the hill. In order to offend him and cause him to discontinue his unwelcome visits, she privately dropped a toad or two—young ladies were not afraid of toads in those days—into his capacious pockets, where they remained until they became offensive. This circumstance became known, and afterwards, whenever a youth was seen wending his way towards the hill, his jesting friends would advise him to take care of his pockets if he was going to Toad Hill." Map of property on "Toad Hill" filed Feb'y. 4th, 1857, No. 157. "Todt or Toadt Hill" is mentioned in advertisement State Tax Sale, 1895.

Iron Hill. Same as Todt Hill. "Description of a survey of 120 acres of land lying in the vicinity of the Iron Hill, upon Staten Island, laid out for Peter Lakeman, by Phillip Welles, surveyor." Land Papers, 1685. The "Iron Hills" are mentioned in the patent to John Palmer of 5,100 acres in 1687. Bayles, p. 115. Clute, pp. 24, 226. (See New Lots at Old Town.)

Yserberg or Iron Mount. "Description of a survey of 176 acres of land upon Staten Island under the Yserberg (or Iron Mount) for Louis Lakeman by Jas: Corteljou, surveyor." Land Papers, 1676.

Ocean Hill. The highest part of Staten Island along which Ocean Terrace Road runs. Map in Bayles' History.

Dongan Knoll. The highest point of the Island overlooking Willow Brook valley and beyond. Report Staten Is. Imp. Com., pp. 63, 88, 89.

Camp Hill. A knoll southwest of the Black Horse Tavern, near the Amboy Road, and called Camp Hill by the British soldiers during the Revolution. Proceedings Nat. Sci. Association, Vol. IV., No. 7.

Kellett's Hill. Near Egbertville ravine and the old saw mill pond. Named after J. P. Kellett, the proprietor of the Richmond Hill hotel. Proceedings Nat. Sci. Association, Vol. I, p. 62.

Meissner's Hill. A later name for Kellett's Hill, which is now traversed by Meissner Avenue. Named after Frederick Meissner. Kellett's or Meissner's Hill is really only a part of Richmond Hill.

Richmond Hill. North of Richmond village. Shown by Dripps, 1850. Mentioned in *Staten Islander*, February 28th, 1857. Also called La Tourette's Hill.

Crocheron's Hill, Fort Hill, or Look-Out Place. The cedar-covered hill west of Richmond village, where the old British fort is located. Geib's Hill is a later name.

Ketchum's or Cemetery Hill. The last hill in the range that commences at Brighton Point and terminates suddenly at Richmond Creek. A better view may be had of the meadows from the top of this hill than from Look-Out Place. For over a hundred years the crown of the hill has been used as a family burying ground.

Forest Hill. Lies parallel to Richmond Hill, being separated by the Mills Dale or Buck's Hollow. The Forest Hill Road extends along the crest of this hill.

Kite or Heifer Hill. That part of Forest Hill over which the road from New Springville to Richmond (Poverty Lane) passes.

Cripp's Back. A hill crossed by the Annadale Road, between Washington Avenue and Fresh Kills Road. The following occurs in notice of auction sale in *Richmond Republican*, January 22, 1831: "All that certain lot of land called Cripp's Back, formerly owned by Nicholas Journeay, deceased, situate in the town of Westfield, in the county of Richmond, beginning at the east corner thereof at Cripp's Back Bars, so called. * * * "

Indian Hill. On the Amboy Road, where joined by Washington Ave., between Eltingville and Annadale. In the records of the laying out of the road leading from Darby Doyle's Ferry to Billopp's Ferry (part of the Richmond Road and all of the Amboy Road) made in 1774, Indian Hill is mentioned. LaForge's Hill is named as being more to the eastward, probably near the southerly turn of the Amboy Road at Eltingville, and Moore's Hill is named as near Sandy Brook. (See Proceedings Natural Science Association, Vol. V., p. 14.) "Johnson's Hill and LaForge's Hill, near the church of the Huguenots," are mentioned in the *Staten Islander*, Feb'y. 25th, 1854.

Bunker Hill. An old name for the high bluff at Prince's Bay where the light-house now stands. Map, 1797. A rather high conical hill at Huguenot, west of Arbutus Lake, is now known as Bunker Hill.

Seguine's or Light House Hill. The hill on which Prince's Bay light is located. Chart, U. S. Coast and Geodetic Survey. Red Bank Light. Walling, 1859. Beers, 1874.

Red Bank. The bluff at Prince's Bay. Colton, 1846. Dripps, 1850. Walling, 1859. Dripps, 1872. Map in Bayles' History.

Neddie Ward's or Ware's Hill. Close to and northwest of Pleasant Plains railroad station and traversed by the Rossville or Bloomingdale Road.

Canada Hill. The prominent hill back of the railroad station at Richmond Valley, Westfield.

Sand Ridges. West of Beach Avenue at Richmond Valley, Westfield. These ridges were occupied by the Indians in old time, and at present a number of interesting hybrid oaks grow in the adjacent lowland known as Decker's Swamp.

Cronk's or Hopping's Hill. A prominent knoll on the north side of the Amboy Road, Tottenville.

Burial Ridge. The knoll near the Billopp House at Tottenville from which many Indian remains have been exhumed.

The Bluff. At Tottenville, near the end of the Amboy Road.

Chestnut Hill. The northern part of Kreischerville (Androvetville) and traversed by the Fresh Kills Road. The following may not refer to same Chestnut Hill: "Description of a survey of a lot of land containing 81 acres with 8 acres of meadow, situate in the middle or body of Staten Island, upon a ridge known by the name of Chestnut hill, laid out for Joseph Arosmith, by Phillip Wells, surveyor." Land Papers, 1683.

Van Allen's or McComber's Hill. The southern part of Kreischerville. The Fresh Kills Road passes over this hill.

Kreischer's Hill. At Kreischerville, opposite the brick works.

Androvette's Hill. Near Kreischerville, on the south side of 'Gene's Creek.

Cedar Hill. Near Kreischerville, on the north side of 'Gene's Creek. It is a rather high sand hill covered with cedars.

Burying Hill. A small sand knoll southwest of Smoking Point, near Rossville, supposed to have been used as an Indian burying ground.

Mount Tobey. The hill on the westerly side of Swaim's or LaForge's Lane at Valley Forge, Westfield.

Pompey's Knoll. A sand dune, close to the Sound, between Cannon's or Land-ing Creek and Chelsea. Pompey was a darkey and lived on this knoll many years ago.

Sailor's Hill. A long sand hill on the southerly side of Decker Avenue (a name for the western end of Merrill Avenue) near Chelsea Road and Saw Mill Creek. The hill received its name from the circumstance that a sailor was buried there many years ago.

Big Hummock, or Beulah Land. The long sand hill that extends along the meadow at Vroom and Old Place Creeks.

Little Hummock. A smaller dune to the southeast of the Big Hummock.

Battle Hill. A sand dune on the southerly side of Bridge Creek where it is crossed by Western Road. One of the numerous skirmishes between the British and the Americans from New Jersey occurred here during the Revolution. A trench was dug on the creek side of the hill in which the killed were buried. A part of Battle Hill is now occupied by the dwelling and garden of the Rev. Jas. E. Kenny.

Aunt Gertie's Hill. A high sand dune on the old De Hart farm, to the east of Newton's Creek, at Holland Hook.

Quarry Hill. The trap rock quarry, known as the Upper Quarry, near Graniteville, is on this hill. Bayles, p. 433. Dripps, 1850. Walling, 1859. An account of the old quarry is given in the *Staten Islander*, July 10th, 1889.

Burger's Hill. At Burger and Castleton Avenues, West New Brighton. A well known locality among the boys some years ago, who used to sleighride down Burger's Hill.

Nanny-berry or Sunset Hill. A hill nearly covered with black-haw bushes and cat-briers, near where Bard Ave. meets the Clove Road. The open ground on this hill is locally known as the Common.

Hickory Corner. Several old fences met on the highest point just east of the upper part of the present Bard Avenue, where also stood a hickory tree, and the hill top, in consequence, was known as Hickory Corner.

Harbor Hill. The high ground at the head of Clinton Avenue, New Brighton.

Ocean Terrace. The high land between the Clove Valley and the Richmond Road along which the Ocean Terrace Road now runs. Map of property on 'Ocean Terrace' filed 19th Sept., 1860. No 181. (See Ocean Hill.)

Smith Terrace. On Boyd's Hill, Stapleton.

Upper Terrace. The hill side at St. Mark's Place, New Brighton.

Lower Terrace. Below the Upper Terrace. A part of Richmond Terrace or Shore Road.

Brighton Heights. Same as Upper Terrace. The "Brighton Heights Dutch Reformed Church" is situated on the corner of Tompkins Ave. and Fort Place. Clute, p. 260.

Knyphausen Heights. The high land above Tompkins Ave. General Knyphausen commanded the British fort situated on these heights, the remains of which may still be seen.

Castleton Heights. The high land north of the Moravian Cemetery and east of Egbert Avenue. Walling, 1859. The town of Middletown was created by an act of the State Legislature in 1860 and was formed from parts of Southfield and Castleton. The hills once called Castleton Heights are now in Middletown. Thoreau in 1843, used to date his letters at Castleton. He lived on the Richmond Road. The residence of Alderman J. Y. Cebra, on the Turnpike and Cebra Avenue, was also called "Castleton Heights." Blood, 1845.

Huguenot Heights. At the corner of Woodrow Road and Huguenot Ave. Dripps, 1872.

Chelsea Heights. On the Turnpike, near Signs Road. Walling, 1859. Beers, 1874.

Moravian Spring. In the Moravian Cemetery and now covered by the artificial lake. Proceedings Nat. Sci. Association, Vol. IV., p. 52.

Mineral Spring. At Freeman Winant's Swamp, near Union or Springville Road. One of the springs that flow into the small pond made by the Crystal Water Co. It owes its name to the considerable amount of iron found in the water, which at one time was taken as a cure for rheumatism.

Van Buskirk Spring. On the Van Buskirk farm at Garretson's Road, North-field.

New Springville Spring. In New Springville village; well known to every Staten Island pedestrian and bicyclist.

Indian Spring. To the west of Willow Brook Road, not far from Corson's Brook. Sam and Hannah, the last Indians resident upon the Island are said to have lived for some years near this spring.

Fresh Pond. Mentioned in Palmer patent in 1687. Bayles, p. 115. Same as Silver Lake. Clute, p. 59. Blood, 1845, Dripps, 1850.

Tushy's Pond. At the corner of the present Cebra and Ward Aves., Middletown. Has been dry for many years.

Westervelt's Pond. Once situated in the low ground in Thrifty Valley through which Monroe and Madison Avenues now run. It received the drainage of Vinegar (Cork) Hill, where the Orchard was located.

Duck Pond. Near the corner of the present York and Brighton Avenues, New Brighton. Now filled in.

Harbor Ponds. In property of Sailors' Snug Harbor. One lies north and one south of Castleton Avenue.

Sexton's Pond. An artificial extension of Boiling Spring Brook on the Sexton property, Castleton Avenue, West New Brighton.

Barrett's Pond. A small pond in the Barrett Nursery grounds at the head of Burger Avenue, West New Brighton.

Britton's Upper Pond, Britton's Pond or Clove Lake (Mill Pond), Martling's Pond or Richmond Lake, Reservoir or Brook's Pond, Schoenian's Pond. A series of artificial ponds in the Clove Valley represented on most maps of the Island. The last mentioned has lately been drained.

Blake's or Brook's Pond. Artificial pond near the corner of Prospect Street and Manor Road. Walling, 1859. The dam of this pond gave way during the great storm of Sept., 1882, and the torrent demolished the brick and stone bridge at Post Avenue. The dam was not rebuilt.

Iron Mine Ponds. The abandoned iron mines near Four Corners, now filled with water.

Van Boskirk's or Factory Pond. Connected with the N. Y. Dyeing and Print Works, West New Brighton. It is now nearly filled in and it is proposed to lay out several streets upon the newly made land. "Mill Pond, of the N. Y. Dyeing and Printing Establishment, formerly known as Van Boskirk's Pond," is shown on map filed March 20th, 1850, No. 70.

Reservoir or Barrett's Pond. Back of the Dye Works on Cherry Lane, West New Brighton. Beers, 1874.

Bodine's Pond. Formed by the damming of Palmer's Run and used for many years by various milling industries. The pond was drained some years ago and the wells of the Richmond County Water Co. have been sunk in the remaining marsh. Mill Lane (Columbia Street) and Pond Road (Jewett Avenue) skirted the edges of this pond.

Red Lake. Between the Morning Star Road and Simonson Avenue, Port Richmond. The pond was formed in the depression made by excavating clay for the Northfield brick works. These works were abandoned some years ago and the pond has lately been drained.

Cape Henlopen. Fifty years ago a small pond on the east side of Van Pelt Avenue, not far from the present Erastina Station, was known as Cape Henlopen. Gradually the name became changed, so that to-day the children about the place know the little pond as Cape Malorca, even sometimes calling it Kate Malorca. At present it contains no cape, but there may have been one in old days, or perhaps its general shape suggested to the fancy of some seafaring resident of Mariners' Harbor the name of Cape Henlopen.

False Pond. A small pond several hundred feet east of Cape Henlopen and near Simonson Avenue. It seems to have been known as Paul's Pond, after Paul Mersereau.

Long Pond. A very small pond north of Cape Henlopen. It has been known by this name for many years.

Sandy Leer. Apparently an old name for this, is the Flag Pond, but of late years it has been called Sandy Leer, because an individual by that name once lived on Simonson Avenue, and the pond was back of his garden.

Log Pond. Near Old Place at South Avenue. Log Brook flowed through this small pond which is now drained.

Dead Man's or Snake Pond. A small pond on the southerly side of Old Place Road near the bend, and not far from Spirit Point. It is called Dead Man's Pond, because a murdered peddler was thrown into it many years ago. When the good inhabitants of Old Place have been going home late at night they have seen strange sights near this pond. A headless man was once observed lingering near it; also an angel supported on a luminous cloud, which we take to have been a will-o'-the-wisp.

Sedge Pond. Sedge Pond Creek extends from the Sedge Pond on the Salt Meadows to Old Place Creek.

Mersereau's, Charles Wood's or Old Place Mill Pond. This pond was constructed in 1804, by David Mersereau who built the tide mill on Old Place Creek. Bayles, p. 559. Charles Wood's Mill Pond is mentioned in the *Richmond Republican*, Feb'y 28th, 1829.

Clifton Lake. Near New York Avenue, in the grounds formerly belonging to Mark Birmingham. Beers, 1874.

Fort Pond. In the Fort grounds at the Narrows, near the end of Richmond Avenue.

Connor's or Duer's Pond. On what was once the Keteltas farm, at Richmond Avenue, Clifton. Beers, 1874. Now filled in.

Lily or Luling's Pond. On the westerly side of the railroad track between Arrochar and Fort Wadsworth stations.

Leavitt's Pond. Between Vanderbilt and Simonson Avenues. On what was once the Geo. Leavitt property.

Frog Pond. Near Vanderbilt Avenue, in Leavitt's Woods. Now drained.

On the Concord Downs, which are composed of impervious drift material, there are many ponds and swamps. Fifty-two are shown on Vermeule & Bien's map. They are nearly all called ponds by the neighbors, but are, as a rule, only ponds by courtesy, most of them being overgrown with swamp-loving vegetation. The largest of these ponds and pond swamps are the following :

Brady's Little Pond. On the edge of the Downs, a few feet to the southeast of Simonson Avenue. Also called Duck Pond.

The Swamp or Clifton Park Pond. On the edge of the Downs a few hundred feet to the northwest of Simonson Avenue. Clifton Park is shown by Walling, 1859. The pond still has a few trees about it and is used for skating, being more of a pond than a swamp. The Bogie of the newspapers appeared in this pond in July, 1895, and attracted many people by its loud singing. It was probably an escaped specimen of the ordinary "Jug-of-rum" bull frog, that is common enough in parts of New Jersey, but has not, so far, been reported from the Island. Goose pond is a small pool a few feet to the west of the Swamp and connected with it.

Wood Pond. Lies several hundred feet to the southwest of the Swamp. This small pond has been known by this name for at least fifty years. A still smaller pond near by and to the west is known as the Black Pond.

Swell-Belly Pond. A few hundred feet from Wood Pond. If Simonson Avenue were continued, it would meet this pond. The boys apply the name rather indefinitely to several contiguous swamp-holes, which are interspersed with knolls.

Radcliff's Pond. Northwest of the Swamp and near Vanderbilt Avenue. Now drained.

Cherry Pond. A small pond between the Swamp and Radcliff's Pond. It is now nearly drained. A cherry tree stands on its margin.

Elmore's Pond. Near the corner of Simonson Place and Oder Ave.

Ipe's Pond. Lies northeast of Steuben Street, and is the largest of the Swamp-ponds of the Concord Downs.

Miller's or Hoble's Pond. Near Steuben Street, Concord.

Fronkel's Pond. Close to and southwest of Steuben Street, Concord. Contains an island.

Fest's Pond. Adjoins Fronkel's Pond.

Gottschalk's Pond. Lies southwest of DeKalb Street, Concord. Gottschalk is a too difficult name for many of the neighbors, who have corrupted it into Gunshot.

Island Pond. On Fox Hill. A small pond.

Willow Pond. Included in the bend of the Finger Board Road. Five willows grow on its margin.

Brady's Pond. Large artificial pond close to railroad track at Grasmere. It occupies the site of the Haunted Swamp. (See Haunted Swamp and Brady's Little Pond).

Widmayer's or Track Pond. Lies close to the railroad track at Grasmere, nearly opposite to Brady's Pond.

Woodside Lake. Near the Finger Board Road and in wet weather connected by a brook with Brady's Pond. Beers, 1874.

Van Wagenen's Pond. An old name for Woodside Lake.

Old Town Pond. A small pond on the north side of the Old Town Road near the railroad track. Proceedings Nat. Sci. Association, Vol. IV., p. 7.

Butler's Pond. South of the railroad track between Garretson's station and Grant City. Proceedings Nat. Sci. Association, Vol. II., p. 75.

Woolsey Pond. On the old Woolsey place on Todt Hill, close to the Four Corners Road.

Johnson's Pond. Near Tyson's Lane, New Dorp. Once a considerable pond, but drained some years ago. Named after Anthony Johnson. Dripps, 1850. Walling, 1859. Dripps, 1872.

Black Pond and Moore's Pond. On the south side of the Richmond Road, near Moore Street, Richmond. Both have been drained. A bog remains on the site of Black Pond, where cranberries grow in some abundance.

Ketchum Mill Pond. West of Richmond. Mill no longer in existence. Clute, p. 101. Often mentioned in Rep't. Staten Is. Imp. Com. Another mill pond was once situated further up Ketchum's Brook, on the southeast side of Forest Hill Road. The remains of the old dam may still be seen.

Hall's Gun Factory Pond or Willow Brook Pond. An artificial pond at Willow Brook. Dripps, 1850. Walling, 1859.

Standing's Pond. Close to and southeast of the Gun Factory Pond. Walling 1859. Beers, 1874.

Crocheron Mill Pond or Bull's Head Pond. Near Sign's Road at Bull's Head. The mill is no longer in existence.

Saw Mill Pond. Near Egbertville. Both mill and artificial pond are gone.

Geib's Mill Pond. At the old tide mill on Richmond Creek below the hill where the British Fort was located. It was formerly known as the Crocheron Mill Pond. Dripps, 1850. The mill was advertised for sale in the *Staaten Islander* during 1857.

Mill Pond at Green Ridge. An arm of Richmond Creek dammed in order to form a head of water for the old Henry Bedell tide mill. Beers, 1874. Bedell's Mill Pond was once called Seguire's Pond, advertisement *Richmond Republican*, Oct. 4th, 1828; also Micheau's Pond, advertisement *Staaten Islander*, Sept. 9th, 1857.

Lake's Mill Pond. A tide mill pond at Great Kill that used to operate the old Lake mill which has lately fallen into ruins.

Clay Ponds. Some of the clay diggings at the brick works near Green Ridge have become filled with water and are locally known as the Clay Ponds.

Seguire's Pond. At the shore, below Annadale station. This was one of the most beautiful ponds on the Island before the timber was cleared away from its margin.

La Tourette's Pond or Arbutus Lake. At the shore below Huguenot station on the old La Tourette farm. The Trailing Arbutus or May flower used to grow in considerable abundance in the vicinity and gave to the pond its latter-day name, which is sometimes corrupted into Brutus Lake. A bulkhead recently built has caused the sand to form at the shore end of this pond and prevents the salt water from entering it.

Wolfe's Pond. At the shore, below Prince's Bay, northeast of Seguin's Point. Wolfe's brook flows into this pond.

Salt Pond. Close to Light House Hill, at Prince's Bay. So called because the tide flows into it. It has of late years become a marsh.

Brown's Pond. An old name for a small pond northwest of Light House Hill, Prince's Bay. It is now on the Mt. Loretto grounds and used as an ice pond.

Elliott's Pond or The Rink. Near the Amboy Road and Elliott Avenue, Tottenville. This was formerly a swamp, but is now a favorite skating place in winter, hence, one of the names.

Three Musk-rat Ponds. Southeast of Elliott's Pond and near Uncle Ed. Wood's Brook.

Long Pond. To the east of the Three Musk-rat Ponds. Lately enlarged.

Weir's Mill Pond. At Mill Creek, Tottenville. Walling, 1859.

Lyster's or LaForge's Pond. Partly on the Lyster and partly on the LaForge farm, near Mt. Tobey, at Valley Forge. Now nearly drained. The outlet of this pond is a branch of Killifish Brook.

Boggy Meadows. Hollow near the Smith Infirmary, through which Brighton Avenue now passes. A name of thirty or forty years ago. Duck Pond was a feature of the locality.

Logan's Spring Swamp. Near Silver Lake. (See Logan's Spring.)

Clove Lake Swamp. In the Clove Valley and crossed by the Turnpike Road. Often mentioned in connection with the natural history of the Island.

Bloodgood's Swamp. Near Sand Lane, south of Richmond Avenue, Clifton. Wm. Bloodgood is represented as owner of considerable land by Blood, 1845.

Garretson's or Sharrott's Swamp. North of the Finger Board Road close to where it is crossed by the track of the Staten Island railroad.

Linden Park Swamp. Below Linden Park near Garretson's Station. Branches of Perine's Creek drain this swamp. Often mentioned as a locality in connection with the flora of the Island.

Haunted Swamp. By placing a dam near the Finger Board Road, and with the aid of the railroad embankment, this swamp has been converted into Brady's Pond. It received its name from the robberies and murder committed on its edge, on Roguery Hill. (See Roguery Hill.)

Reed's Basket-willow Swamp. In the hills, near the Richmond Road at Garretsons. The Reeds, father and son, were basket makers; they grew willows in this swamp and resided in a small house on its margin. In a fit of despondency, after having parted with his property, the younger Reed burned the house to the ground.

Ben William's, Haumed or Magnolia Swamp. To the west of the Amboy Road, between Oakwood and Giffords. "A very worthy old stage driver, named Ben Williams, running a line of stages over the route nearly parallel with that which had been selected for locating the railroad, remarked on learning that such a road was in contemplation, 'Make a Railroad! Where will they get passengers from? I have run my stages for five years, and am not half full most of the time.'" "Hand-Book and Business Directory of Staten Island," p. 13.

Boylsted's Swamp. Shown by Bew, 1781, but made to cover so much territory that its position is uncertain. The Haunted or Magnolia Swamp, however, appears to occupy a portion of the ground.

Decker's Swamp. West of Beach Avenue, at Richmond Valley, Westfield. The Sand Ridges form the western boundary of this swamp.

Christopher's Swamp. Near the Billopp House, Tottenville.

Ellis' Swamp. Crossed by the Fresh Kills Road at Kreischerville. 'Gene's Creek extends into this swamp.

Freeman Winant's Swamp. Southwest of Union or New Springville Road, on the edge of Neck Creek meadow. The Crystal Water Co. have located wells at this point.

Crocheron's Swamp. Southwest of Union or New Springville Road on the edge of Dock Creek meadow. New Springville Brook flows through this swamp.

Vreeland's Swamp. On both sides of Union or New Springville Road, between Crocheron's and Freeman Winant's Swamp. Vreeland's Brook flows through this swamp into Dock Creek.

Great Swamp. Extends from the present Graniteville to New Springville. Mentioned in the patent to Palmer in 1687. Bayles, p. 115. Clute, p. 59.

Long Creplebush. "Petition of John Shadwell, of the county of Richmond, praying that 8 or 10 acres of land, lying between his lot and the long creplebush, in said county, may be surveyed in order that he may obtain a patent for the same." Land Papers, 1702. There was a Cripple Bush on New York Island, as appears from the following: "One Lott of Ground Lying and being near the Crupple Bush." *New York Weekly Journal*, December, 1734. "Bestevaer's Cripple Bush, was the Dutch name for what was afterward called Beekman's Swamp, covered by the present Ferry, Gold and adjacent streets." "Bestevaar's Cripplebush, or the Old Man's Swamp." Valentine's Manual, p. 469, 1856; p. 545, 1860 and 1864.

Hilleker's Swamp. Crossed by Merrill Road, near Watchogue.

Pine Tree Swamp. Near Lambert's Lane, Watchogue, and north of Hilleker's Swamp. Also known as Magnolia Swamp. Pine Tree Swamp is mentioned in the *Richmond Republican*, March 18th, 1831.

The Swamp. A local name for the small swamp on Bard Avenue, near where the Morgan residence now stands.

MEADOWS, FIELDS AND PLAINS.

Flats. The best known are the Stapleton Flats (Bayles, p. 304), located at the foot of Prospect Street. They were made by digging away Prospect Hill and filling in along the shore. The level ground at Brighton Point (St. George) was also once known as the Flats.

Baker's Field. At Montgomery and Monroe Avenues, New Brighton. A well-known children's play ground about 1870.

The Fresh Meadow. In Logan's Spring Valley, north of Silver Lake. Named in the Palmer or Dongan patent, in 1687 (Bayles, p. 115); also in deed of Dongan's trustees to Hendrick Hendrickson. In the Phillip Welles patent the Fresh Meadow is mentioned as near a "great rock stone."

Great Plain. Said to have been the comparatively level tract to the east of the Great Swamp. The following is from a notice of sale at public auction contained in the *Richmond Republican*, Feb'y 5th, 1831: "* * * all that certain tract or parcel of land, situate, lying and being in the county of Richmond and state of New York, and in the town of Castleton, at or near a place formerly called soldier's lots, in the rear of the land patented to Cornelius Corson and others, on the great plain * * *."

Little Plains. "Petition of Samuel Blachford, praying that a lot of land lying upon ye little plains, adjoining to ye soldiers lots on Staten Island, may be laid out for him," Land Papers, 1683.

New Dorp Plains. The level country about New Dorp Lane. Higginson, 1860. Report Staten Is. Imp. Com., pp. 74, 79. *Staaten Islander*, Feb'y 16th, 1856.

Great Kill Meadow. At Great Kill, and mentioned in advertisement in *Richmond Republican*, May 29th, 1830. The wet land along the edge of the meadow is locally known as "The Bogs."

The Meadows. A local name for the low land between Ward's Point and the Cove, Westfield.

Fertile Plain. Between Benedict's Creek and the Fresh Kills Road. Walling, 1859. Named on the various editions of Colton's Road Map of Staten Island.

Buckram Field. The field south of the Dye Works at Broadway, West New Brighton. Soldiers were encamped there during the last war.

Butt Field. Near the Morning Star Road, at Red Lake. Well known to the neighbors as a ball ground, and called the Butt Field because in one portion of it there are stones and stumps, the latter, however, now mostly removed.

Old Blue-Bent Field. The public school building on Andros Avenue, Mariners' Harbor, stands on part of the Old Blue-Bent Field. The name was applied to a tract of sandy land where the blue-bent or beard-grass (*Andropogon*) still grows in abundance, and where the Indians lived in old time, as evinced by their implements still to be found in the field.

PART II.

FERRIES AND LANDINGS.

THERE is a chapter devoted to ferries and transportation in the "History of Richmond County," but some of the following notices antedate those mentioned in the history. A valuable account of Staten Island Ferries is also to be found in the action of the "Mayor, etc., of New York, plaintiffs, against John H. Starin, Independent Steamboat Company, and others, defendants," 1885.

Indian, Decker's, Ryers', Hilleker's and Mersereau's Ferries. At what is now known as Port Richmond. Clute, pp. 221, 309. Bayles, pp. 172, 202, 246, 560, 684. Decker's Ferry is on Bew's map, 1781, and is mentioned under date of 1777 in Valentine's Manual, 1863. Ryers' ferry is on map, 1797, and on Eddy's map of 1812. John Ryers ran an opposition to John Hilleker's ferry. David Mersereau bought out both of these ferries. In the county clerk's office there is a "Map of Land at Irrington or Mersereau's ferry, Staten Island," surveyed, 1842 (No. 28). Ryers' and Mersereau's ferry is mentioned in *Staaten Islander*, June 18th, 1856.

Dacosta's Ferry. Placed on Bew's Map, 1781, to the west of the Dutch Church, at what is now Port Richmond.

Schuyler's Ferry, Elizabethport and Staten Island Ferry. In 1762 Adoniah Schuyler operated a ferry between Elizabethtown Point and the Island. Bayles, p. 684. In 1851 the Elizabethport and Staten Island Ferry Co. was organized and service maintained for a period.

De Hart's Ferry. Located 500 to 600 feet east of the New Brighton landing at the foot of Jersey St. In 1747 Jacob De Hart petitioned Gov. Geo. Clinton for letters patent for a public ferry. He had operated the ferry for some time previous to his petition.

Beek's and Corsen's Ferries. On May 15, 1747-8, a petition in opposition to De Hart was presented by neighboring property owners. "John Beek and Jacob Corsen have for some years past, used to carry travellers from their lands to the City of New York and to the opposite shores of New Jersey * * *."

Comes' Ferry. In 1747, Solomon Comes having purchased DeHart's farm before any decision upon DeHart's petition had been reached, renewed this petition: "Petition of Solomon Comes for a ferry between Staten Island and New York, &c." "Petition that his ferry between Staten Island and New York, may be declared a public ferry." Land Papers, 1747, 1748. Comes' petition was granted.

Van Tuijl's or Van Tyle's Ferry. To the west of Comes,' formerly DeHart's, ferry. "Petition of Otto Van Tyle and others, against granting Jacob de Hart a patent for a ferry between their land and the river, and the land between high and low water mark (Staten Island) with caveat." Land Papers, 1747.

Gozen Ryerson's Ferry. At the east end of Staten Island at the entrance to the Kills. Bayles, p. 683. In the minutes of the Common Council for March 29th, 1785, there is a memorandum stating that the Staten Island ferry was sold for the term of three years, from May 1st, 1786, to Gozen Ryerson for £20 per annum payable quarterly.

Still House Landing. Named from a distillery built by Capt. Thomas Lawrence on a small wharf at the present New Brighton landing at the foot of Jersey St. Bayles, p. 82. Director Kieft founded a brandy still on the Island in 1640, which is said to have been the first manufactory of spirituous liquors in America.

Some Other North Shore Ferries were the New Brighton Ferry, maintained by Thos. E. Davis, Griswold and Nathan Barrett, who ran the steamboat "New Brighton" in 1837 or 1838; George Law's ferry from 1859 to 1864?; the North Shore Staten Island Ferry Co., purchasers of George Law's ferry, 1860 to 1877; New York and Staten Island Steamboat Co., successors to the last mentioned company, from 1877 to 1884, when the Staten Island Rapid Transit Railroad Company commenced operations.

Watson's, Duckett's, Darby Doyle's, Wm. Leake's, Cole's and Van Duzer's Ferries. According to Faden's map of 1776, Doyle's ferry was at the present Stapleton, at or near the Basin. Cole's ferry is often mentioned in the accounts of the Revolution. It was at the end of the Richmond Road, at its junction with the present Bay St., and later became known as Van Duzer's ferry. Property belonging to Edward Perine and wife is described in 1801 as: "Beginning from south side of Main road leading from Van Duzer's Ferry to Richmond Town at the northeast corner of John Bodine's land," &c. Van Duzer's periauger ferry seems to have been in operation from before 1788 to 1817. It is shown by Eddy, 1812. The old Van Duzer homestead has only recently fallen into ruins. "Vanduzer's Old Landing" is shown by Dripps, 1850. Bayles, pp. 143, 185, 202, 242. 326, 683, 684.

Vanderbilt's Periauger Ferry. Plied between what is now Stapleton and New York from about 1800 to 1817. This ran in opposition to Van Duzer's Ferry.

Dove and Bellue's Ferry. "The statement in the petition and the Governor's warrant that there was a public road leading to the 'place on the easternmost part of Staten Island called Sand Bay, very convenient for travelers and transporting of goods and the posts,' taken in connection with an ancient map of Staten Island made by S. Bellin in 1764, found in Valentine's New York City Manual for 1861, page 597, shows quite conclusively that the Staten Island end of this ferry was at the foot of Cliff Street, just south of the present Quarantine officer's station in Clifton, about a mile below Vanderbilt or Clifton Landing, and on the line of the present Fingerboard Road, which undoubtedly formed in those days part of the Old Amboy Road, over which the posts traveled on their way from the mainland to the city." Mayor, &c., of New York against Starin &c., Argument for Defendants, p. 6. (See Sand Bay.)

Narrows Ferry. "Silvanus Seamans, who keeps the upper ferry, at the Narrows, on Staten Island side, having good boats for that purpose, proposes, besides the proper attendance at the said ferry, constantly to keep a passage boat to go from thence to the city of New York, which will certainly set out every Tuesday and Friday, and return the same day if possible, and at any other time, if passage or freight presents. All gentlemen and others may depend on the best usage and care, either of themselves, horses or goods of any kind; he also keeps very good entertainment for men and horses. On either of those days the boat may be found in New York by inquiring at Mr. John Cregier's, a corner house at the Old Slip." *N. Y. Weekly Post Boy*, July, 1745. (Reprinted in Valentine's Manual, 1862.). The "Narrows Ferry" is marked on Faden's map, 1776. Frederick Simonson owned a ferry at the Narrows in 1777. Bayles, pp. 143, 171, 681, 684. "This is to inform the public that John Lane now keeps the ferry at Yellow Hook on Long Island, six miles below New York Ferry,

and has provided good boats, well fitted with proper hands, and will be ready at all times, wind and weather permitting, to go to Smith's Ferry, on Staten Island with a single man only. N. B.—Travelers are directed to observe in going from Flatbush to Sand Ferry, to keep the marked trees at the right hand." Reprinted in Valentine's Manual, 1855, p. 571, from an old newspaper of 1753.

Tompkins' or Quarantine Landing. The ferry landing at Tompkinsville (see Quarantine). "The Steam Boat Bolivar, Capt. Oliver Vanderbilt, and the steam boat Nautilus, Capt. Robert Hazard, will take passengers to and from New York to the Quarantine Dock, Nautilus Hall, Mount Pleasant Garden, Planter's Hotel, and Union Garden, Staten Island, and start as follows: Leave Staten Island at 7 a. m., at 8 a. m., at 10 a. m., at half past 12 p. m., at half past 2, at half past 4, and at 6 o'clock. Leave Whitehall, New York, at 8 a. m., and at 10 a. m., at half past 12 p. m., at half past 2, at half past 4, at half past 5, and at 7 o'clock. Fare each way, 12 and a half cents." Advertisement in *Richmond Republican*, June, 1828. "For Freight or Charter.—The fast-sailing Periauger, New York, of 34 tons, will take in freight or passengers for New York or the adjacent country, on the most moderate terms. For freight or passage apply to John Kettletas, Tompkinsville." Advertisement in *Richmond Republican*, Dec. 22d, 1827. Tompkins' and Staples' Ferry is mentioned in advertisement in New York *Herald* of 1835. Proceedings Nat. Sci. Association, Vol. III, p. 60.

First, Second and Third Landings. Before the present rapid transit system, Tompkinsville Landing at the foot of Arietta St., was often called First Landing; Stapleton Landing at the foot of Canal St., Second Landing, and Clifton Landing, near the foot of Vanderbilt Ave., Vanderbilt's or Third Landing.

Vanderbilt's Landing. Near the foot of Vanderbilt Avenue, Clifton. Named after Cornelius Vanderbilt. Dripps, 1850. Walling, 1859. Beers, 1874. A name in much use until recent years.

Some Other East Shore Ferries were Tompkins' & Brown's Steamboat ferry, operated from 1817 to 1827; the Fulton Bank ferry, from 1827 to 1833; Richmond Turnpike Co's. ferry, from 1833 to 1845; C. Vanderbilt's ferry, from 1845 to 1855; Jacob L. Smith's ferry (lease in his name), from 1856 to 1867. George Law was chief owner in the Smith ferry and sold it to the Staten Island Rail Road Company in 1863 or 1864, who continued its management until the Staten Island Rapid Transit Rail Road got control.

Seguine's Landing. At Seguine's Point, Westfield. Mentioned in advertisement in the *Mirror*, Aug. 11th, 1838.

Amboy, Billopp's, Dote's (Doty's) and Butler's Ferries. At Tottenville. "These are to inform all persons that there is a ferry settled from Amboy over to Staten Island, which is duly attended for the conveniency of those that have occasion to pass and repass that way. The ferriage is fourteen pence, Jersey currency, for man and horse, and five pence for a single passenger." Reprinted in Valentine's Manual, 1862, p. 715, from an old newspaper of July, 1737. Amboy Ferry is on Bew's map, 1781. Bayles, pp. 143, 681, 684. Proceedings Nat. Sci. Association, Vol. III., p. 54. Map, 1797. (See Philadelphia Turnpike.)

Totten's Landing. At the foot of the present Main or Totten St., Tottenville. Dripps, 1850.

Elting's Landing. At the present Kreischerville. Dripps, 1850.

Blazing Star Ferry. At the present Rossville. Clute, p. 73. Bayles, pp. 192, 682. On Map, 1797. "Ferry at Blazing Star. Francis B. Fitch, respectfully informs

the Public, that he has once more started the above Ferry, for which he has built a first-rate Scow, and as soon as the traveling will warrant, he intends adding a Horse Boat, and no exertion or expense on his part, shall be wanting to secure public patronage. The Turnpike to the Quarantine, (it being only seven miles) is now in complete order, as also the Turnpike to New-Brunswick, twelve miles. The road to Rahway, Milton, Westfield, &c., is also in good repair. Blazing Star, Nov. 24th, 1827." Adv. in *Richmond Republican* Nov. 24th, 1827. "Old Blazing Star ferry" is mentioned in *Staaten Islander*, Jan. 25, 1854.

New Blazing Star Ferry. On Long Neck, where the present Linoleumville is situated. Bayles, pp. 192, 682, 684. Map, 1797. (See Philadelphia Turnpike.) The "New Ferry" is shown by Eddy, 1812.

ROADS AND LANES.

Under the colonial government, Richmond County was divided in March, 1688, into Castletown, Northfield, Southfield and Westfield. Under the State government, act of March 7th, 1788, these divisions were again made and their boundaries fixed. Bayles, pp. 95, 326. The town of Middletown was not organized until 1860. As might be supposed, portions of the boundaries of the original four towns were fixed by some of the old roads. Thus, on the map of 1797 the west boundary of Castletown (now the west boundary of Castleton and Middletown) is shown as a single road leading from the present Watchogue Road to the Richmond Road, and is described as leading to Houghwout's Mill, and "as it runs along by Richard Connors to the Tavern called the Rose and Crown, on the said Road leading to Richmond-Town." This single road which extends in a general way north and south, has received different sectional names. Thus the part from the Watchogue Road to Willow Brook is known as the Willow Brook Road (Beers, 1874); the following southeasterly stretch as the Summer Field Road (Beers, 1874); then the southwesterly stretch as the Manor Road, and then the following southeasterly stretch as the Saw Mill, Conner or Egbertville Road. This naming has come about by the opening of new roads that are direct continuations of parts of the old zigzag highway, leaving it as a whole, a short cut to nowhere.

King's Highway. The Richmond Road. Bayles, p. 223. "Petition of Jacob Galliot and others, of Richmond county, for a warrant to lay out a cartway from their lands to the King's Highway." Land Papers, 1707. This road is described in 1801 as "main road leading from Van Duzer's Ferry." "Richmond Road to Quarantine" is shown on map of property purchased by the Staten Island Association, filed in March, 1839, No. 22; also on other maps of about the same date. "Road from Richmond Village to the Quarantine" is shown on map of the John Britton farm, filed Oct. 29th, 1853, No. 125.

Richmond Plank Road from Vanderbilt's Landing to Rossville. "Map of the Richmond Plank Road from Vanderbilt's Landing to Rossville, 10.297 miles, J. B. Bacon, Surveyor, Staten Island," 1853. Filed 30th June, 1853, No. 114. The roads leading into this highway are the following, the names in parenthesis being additional to those given on the above mentioned map :

Shore Road. (Bay St. Beers, 1874.)

Old Richmond Road.

Clove Road.

Fingerboard Road.

Old Town Road.

Castleton Road. (Four Corner Road. Beers, 1874.)

New Dorp Lane.

Amboy Road.

Manor Road. (Saw-mill, Conner or Egbertville Road.)

Gifford's Lane.

Port Richmond Plank Road. (Seaside Ave. Beers, 1874.)

South Side Road. (Annadale Road.)

Road to South Side. (Journey Ave. Beers. 1874.)

Washington Avenue.

Killi-fish Road. (Swaim's or LaForge's Lane.)

Woodrow Road. (Shea's Lane, Road to Woodrow, &c.)

On several maps filed in 1843 and 1854, appears the "Richmond Plank Road," the "Plank Road from Vanderbilt's Landing," or the "Richmond Plank Road to Vanderbilt's Landing." In the *Staten Islander* for Jan. 23d, 1856, it is stated that the Richmond Plank Road Company has paid 14 per cent., and is now paying a dividend of 20 per cent.

Shore Trail. The Shore Road or Richmond Terrace. Said to have been an Indian trail. The road formerly ran all the way around the shore from Mariner's Harbor to the old Tompkinsville Landing, but when the Quarantine hospitals were built, that end of the road was closed. Proceedings Nat. Sci. Association, Vol. II., p. 52. "Shore Road to Mersereau's Ferry" is shown on map of Simonson property, filed June 18, 1834. No. 6.

Haley's Lane. An old name for Davis Avenue, West New Brighton.

Parker Avenue. An old name for Davis Avenue. Given by Walling, 1859. Shawmut Avenue was a proposed name for Davis Avenue. (Beers, 1874.)

Elliott Place. An old name for First Street (Beers, 1874), now Livingston Place, at Livingston.

Mill Lane. The present Columbia Street. Bayles, pp. 5, 207. Clute, p. 97.

Pond Road. The present Jewett or Division Avenue. Beers, 1874. Bayles, p. 5.

Little Pond Road. Same as Little Clove Road. Dripps, 1872.

Ellingwood Road. Many of the iron mines on Ocean Terrace were situated on the Ellingwood property and the Ellingwood or Iron Mines Road lead to them from the Little Clove Road. The northern portion of the Ocean Terrace Road of the present maps represents a part of the old Ellingwood Road. The Douglass Road, the most tortuous private or public highway on the Island, was also partly on the Ellingwood property. Beers, 1874. Advertisement State Tax Sale, 1890.

Philadelphia Turnpike. Report Staten Island Improvement Commission, p. 73. Same as Richmond Turnpike, which was once the post and stage road to Philadelphia. That portion of the Turnpike, from its present junction with the Little Clove Road to the head of what is now known as Jewett Avenue, is represented on the map of 1797. The remainder of the road, both to the east and west of this section, was laid out in 1815 and 1816 by the "Richmond Turnpike Company," as appears from the following, copied from the session laws of 1815, act of March 31st, page 119. "Be it enacted &c. that all such persons as shall associate themselves together for the purpose of making a good and sufficient turnpike road in the most direct and practical route from a point on the easterly side of Staten Island within one mile of the marine hospital or Quarantine Ground in the County of Richmond to the westerly shore of said Staten Island at such point on the said westerly shore as may be in the most direct line from

the place of beginning to the City of New Brunswick in the State of New Jersey, and a branch of said road in the most direct route to Amboy Ferry shall be and hereby are created a body corporate and politic by the name and style of Richmond Turnpike Company." The Session laws of 1817, page 17, Dec. 1, declares that it shall not be necessary for the Richmond Turnpike Co. to make a branch to Amboy Ferry from the road already completed by them leading from the Bay of New York to the New Blazing Star Ferry and they are thereby released from the same. The New Blazing Star Road is shown on map finished Oct. 12th, 1793, and filed Feb'y 7th, 1852. No. 89. The Turnpike was sometimes called the Governor's Road, that is, Gov. Tompkins' Road, because he was instrumental in having it laid out.

Long Neck Road. Rept. Staten Is. Imp. Com., p. 73. Same as Richmond Turnpike.

Old Burying Hill Road. At Travisville. Extends from Cannon Avenue past what is now Sylvan Cemetery, to the Turnpike.

Church Road, Port Richmond Plank Road, Stone Road. Road leading from Port Richmond to New Springville. Known at first as the Church Road, then as the Port Richmond Plank Road, then as the Stone Road, and now called Richmond Avenue. This old highway is a direct continuation of the Morningstar Road at Graniteville, and it is to be regretted that when the change of name was made, that Morningstar was not preferred. Map of the Port Richmond and Fresh Kill Plank Road. Filed 15th March, 1852. No. 95. "Port Richmond and Fresh Kills Plank Road Company. The annual election of a Board of Directors of this Company will take place at the office of the Company at Marshland, on Wednesday, March 5th, at 12 M. By order of the Board of Directors. Dated, Marshland, Feb'y 6th, 1856. H. I. Seaman, Secretary." Advertisement in *Staaten Islander*, March 1st, 1856. "B'd N. by Springville Cemetery, E. by Stone road, and S. & W. by land of Cortlandt Crocheron and others; with house, 8½ acres. Adv. State Tax Sale, Dec., 1890.

Garretson's Road. Dripps, 1872.

South Broadway. Beers, 1874. Garretson's Road or South Broadway, also once known as a part of the Port Richmond and Fresh Kills Plank Road, is the road leading from New Springville to Green Ridge. Garretson's toll bridge across Richmond Creek fell into ruins some years since. It connected Eltingville or Seaside Avenue (Plank Road, Higginson, 1860) in Westfield, with the Church or Port Richmond Plank Road (Stone Road) in Northfield. The Port Richmond and Fresh Kills Plank Road and the Plank Road from Vanderbilt Landing, are shown on map of land, belonging to Obadiah Bowne, Esq., situate in Westfield, Richmond Co., N. Y. Filed Nov. 9th, 1853. No. 128. Garretson's Road is occasionally called Bridge Avenue, and also the Old Turnpike. (See Fresh Kills Bridge.)

Morgan's Road. Previous to the construction of Garretson's Road or South Broadway, there was an old road leading along the edge of the meadow on the westerly side of Karle's Neck. Several of the farms were occupied at that time by members of the Morgan family, and for want of a better name we have called it Morgan's Road. When the Plank Road was built the old one fell into disuse, and is now grass grown, and, as a highway, neglected.

Watchogue, Butcherville or Snake Road. Starts where the Pond Road (Jewett Avenue) meets the Turnpike and runs a serpentine course to the Church or Stone Road. That portion from Four Corners to the Willow Brook Road is laid down on the map of 1797 and is among the oldest roads of the Island, but as far as observed is not named on the maps, though generally known as the Watchogue or Butcherville

Road. It is sometimes referred to as the Snake Road on account of its serpentine course.

Kruse Road. That part of the Willow Brook Road between the Watchogue Road and the Church Road or Richmond Avenue, Port Richmond. It is one of the oldest roads on the Island and is on the map of 1797. Beers, 1874, calls it the "Kruse or Wilson Brook Road."

Gun Factory Road. A name for the Willow Brook Road. The gun factory was at Willow Brook and is shown by Dripps, 1850. Walling, 1859. Gun Factory Road is mentioned in advertisement State Tax Sale, 1895.

New Road. An extension of the Willow Brook Road, by which name it is generally known.

Pismire or Ant Lane. Same as New Road. In old days when the farmers turned out to work this highway, they discovered so many ants' nests that it received the name of Pismire Lane.

Forest Hill Road. An extension of that part of the Willow Brook Road known as the New Road. It is crossed by Jones or Rockland Avenue, and is called by Beers, 1874, the Port Richmond Road. "B'd by Rockland Avenue, E. by land of Judge Gildersleeve. S. by land formerly of Samuel Decker and W. by Forest Hill Road; with house. 7 acres." Adv. State Tax Sale, Dec. 1890.

Manor Road and Egbert Avenue. Only a part of what is now known as the Manor Road, which derives its name from the Dongan Manor, is on the map of 1797. It is said to have been laid out at an early period. Bayles, p. 118. This road runs southerly from West New Brighton through Castleton Corners to its junction with the road from Todt Hill, then westerly to Bradley's Road and then southerly again to the Egbertville Road. Beers, 1874. That portion from Bradley's Road to the Richmond Road (including the Egbertville or Saw Mill Road) is the old 1797 highway, and is sometimes referred to as the Manor Road. (See Richmond Plank Road from Vanderbilt's Landing to Rossville.) That portion from Bradley's Road to the Egbertville or Saw Mill Road, is occasionally called Rosewood Avenue (Higginson, 1860), and also the Poor House Road. The Manor Road is shown on the map of Rose Hill Park (Unkart property) filed 20th of October, 1870. No. 294. Egbert Avenue is a direct southerly continuation of that section of the Manor Road leading directly from Castleton Corners, and is therefore often, in error, called the Manor Road. It, however, forks from the Manor where the latter turns to the west and it joins the Egbertville Road mentioned above, about a mile further to the east. Dripps, 1850, calls it Egbert's Avenue. It is Egbert Avenue of Walling, 1859, and Beers, 1874.

Petticoat Lane. Jones' Road or Rockland Avenue, in Northfield. It is said that a petticoat was once found on this road. Jones' Road once joined that part of the Willow Brook Road known as the New Road, much further to the north than it does at present, coming out near what is now the poor house farm.

Saw Mill or Conner Road. Old names for the road commencing at the corner of Rockland Avenue and the Manor Road, and extending to the Richmond Road, at Egbertville, and now sometimes called the Egbertville Road. (See Manor Road.) The saw mill was located on Saw Mill Brook, and was operated by the Conner family, whose residence stood near by. This road is shown but not named on map, 1797. The original town of Castleton was bounded by the "road leading to Houghwout's Mill," (Bayles, p. 326) which is evidently this and a part of the present Willow Brook and Manor Roads. This and the later constructed Jones' Road (Rockland Avenue)

taken as one, is called Richmond Road, by Higginson, 1860. 'Connor Ave.' is mentioned in advertisement State Tax Sale, 1895.

Poverty Lane. The road "from Springville to Richmond." Beers, 1874. New Springville Road. This is one of the old roads and is on the map of 1797.

Dock Road. Leading from New Springville dock to the Stone Road. Not named on the maps. A branch of this road, called Morgan's Road in this article, extends southward along the edge of the meadow. When Garretson's Road was opened, this part was abandoned and is now a grass-grown lane.

Egbert's Lane. Described in 1788 as being the western boundary of the town of Southfield; now Gifford's Lane. Bayles, p. 327.

Lambert's Lane. Leads from the Stone Road to Watchogue and is named on most maps of the Island. It was called after Lambert Merrill, a carpenter by trade, whose housekeeper, Nancy Juson, according to the firm belief of the neighbors, was a veritable witch. A wagon load of hay was passing along the lane, and when opposite the Merrill house was beset by unaccountable difficulties and directly overturned. The team following passed unharmed with its load, and Nancy declared that it was driven by a praying man over whom she could cast no spell. On one occasion Merrill, while working in his shop, desired a mallet that was upstairs. Soon he heard it bump, bumping down the steps, and directly it shoved open the door and lay by his side. He did not want it then and so threw it upstairs, but directly it came bumping, bumping down the steps as before. Once more he threw it aloft, and when it persistently returned for the third time, he seized an axe and cut off its handle. The next day the witch had a sore leg.

The Long, Long Lane that has no Turning. A nickname for Merrill Road, Watchogue, that for nearly a mile is perfectly straight.

Old Place Road. Leads from Graniteville to Old Place. Now sometimes called Washington Avenue.

Old Quarry Road. Leading from the quarry on Quarry Hill, Graniteville, to the shore. Shown by Dripps, 1850, and Walling, 1859.

Sand Road. An old name for Van Pelt Avenue, Mariners' Harbor.

New Road. An old name for the Harbor Road, Mariners' Harbor.

Thompson's Road. South Avenue, Mariners' Harbor, was once well known as, and is still occasionally called Thompson's Road. "South or Thompson Avenue" is shown by Walling, 1859. The name South Avenue was given it in 1847 when a map of the property was filed at Richmond.

Western Road. Leading from Holland Hook to Old Place. This road has been known as Collyer's Road, Bowman's Road, the New Road and the Meadow Road.

Duxbury St. Named after Ellis Duxbury, and an old name for Tompkins Avenue. "Duxbury Street or road leading from the Quarantine to the north shore." is mentioned in the Abstract of the Title of Thomas E. Davis to Certain Lands in Castleton, pp. 12, 38.

Fountain St. Named after Garrit Fountain and now known as South Street. Mentioned in the Abstract of the Title of Thomas E. Davis to Certain Lands in Castleton. Livingston Street and Thompson Street are also mentioned in the Davis abstract, but they were never laid out.

Lawrence St. An old name for Stuyvesant Place and part of Richmond Ter-

race. This street and Daniel Street, which occupied nearly the same ground as the present Wall Street, are mentioned in the Davis abstract, but the names were changed on the New Brighton Association Map, filed in 1836.

Washington Crescent. Shown on map of the New Brighton Association, as occupying nearly the same site as the present crescent-shaped Hamilton Avenue. Madison Street, lying east of Jay Street, Nassau Street and Catlin Avenue, are also shown on this map. They have never been laid out.

Richmond Street. An old name for St. Paul's Avenue, Tompkinsville. Blood, 1845. (See Mud Lane.)

Gore Street. Now called Broad Street, Stapleton. Clute, p. 270.

Coursen Avenue. An old name for Vanderbilt Avenue, Clifton. This road passes through what were once the Coursen and Metcalfe farms. Coursen Avenue is shown on "Map of Property Purchased by the Staten Island Association, Situated at the Narrows, Staten Island, near New York." Filed March, 1839. No. 22.

Wood Road. Blood, 1845. Dripps, 1872. An old name for St. Mary's Avenue, Clifton. "Wood Road" was also used in the sense of a locality.

Roguary Hill Road. An old name for the Finger Board Road. Clute, p. 232.

Clifton Avenue. A proposed name for the Finger Board Road on map of Oaklands, filed Dec. 21st, 1857. No. 159.

Beach Avenue. A proposed name for New Dorp Lane on map of Oceanville, filed April 19th, 1853. No. 110.

Fox Avenue. An old name for the present Broadway leading from the Amboy Road, between Annadale and Huguenot, to the shore.

Woodvail Road. Leading from the Amboy Road to the shore. Beers, 1874. Mr. Wood owned property on one side of this road and Mr. Vail on the other, and in laying out the highway they combined their lands and names.

Sharrott's Road. Old name for Prince's Bay Avenue (not Prince's Bay Road). Beers, 1874.

Seguine's Road. Dripps, 1872. Same as Prince's Bay Road. Beers, 1874.

Winant's Lane. Now known as Annadale Road. An old road; on map 1797.

Swaim's or LaForge's Lane. Leads from Valley Forge to the Woodrow Road. Called Killi-fish Road on "Map of the Richmond Plank Road from Vanderbilt's Landing to Rossville."

Shea's Lane. Still so called on the maps but efforts have been made to change the name to New York Avenue and later to Rossville Avenue. Sometimes referred to on maps, &c., as "Road to Woodrow."

Ferry Road. An old name for Shea's Lane. Proceedings Nat. Sci. Association, Vol. III., p. 53.

Bloomingdale Road. An old name for the road leading from Pleasant Plains to Rossville, now known as the Rossville Road. The part nearest Rossville is also called the Red Road.

Bentley Dock Road. An old name for Bentley Road, Tottenville. Beers, 1874, calls it Bentling Road.

Green Ridge Avenue. A proposed name for Journeay Avenue, Westfield.

Sunny or Lovers' Lane. Hamilton Avenue, New Brighton. On a sunny day there are always warm places along this sheltered road that bends in the form of a half moon, and as it is sequestered it must needs be a "Lovers' Lane."

Lovers' Lane. Tree-shaded Pendleton Avenue ; also, First Street, New Brighton.

Mud Lane. St. Paul's Avenue, Edgewater. Bayles, p. 420. St. Paul's Avenue was once called Richmond Street. Blood, 1845.

Pig Alley. First Street, New Brighton. Also called Lovers' Lane. Honey-moon Row (the name needs no explanation) extends along the south side of this endearing little street.

Cod-fish Lane. Fifth Street, New Brighton.

Scrabble Alley. Union Street, West New Brighton. Also known as McSorley's Place.

Duck Lane. Nautilus Street, Clifton.

Red Lane. Lincoln Avenue or First Avenue, Grant City, Southfield. Probably owes its name to the fact that much oxide of iron is contained in the soil which gives the road a red color.

LOCALITIES, SETTLEMENTS AND VILLAGES.

The Glebe. A farm in Castleton, of 200 acres, bequeathed to St. Andrew's church by Ellis Duxbury in 1718. Bayles, pp. 242, 395. This farm included the present St. George landing (Duxbury's Point), the Light House Department grounds, the old Quarantine and the vicinity.

Quarantine. Central Avenue, New Brighton, passes through what was once the Quarantine of the port of New York, established on Staten Island in 1799. Blood, 1845. Dripps, 1850. The Lazaretto of Eddy, 1812. (See Philadelphia Turnpike.) The *Richmond Republican*, for March 29, 1828, contains the following advertisement : "Quarantine and Richmond Stage. The public is respectfully informed that a Stage will commence running to and from the Quarantine ground and Richmond, on Saturday, the 29th of March inst., and will leave Richmond every morning at half past 6 o'clock, so as to take the Steam Boat for New York at 8. And will leave the Quarantine, for Richmond, every afternoon on the arrival of the Boat from New York, until further notice. Good Stages and horses and a careful driver have been procured. Fare each way 37½ cts., intermediate distances, 6 cts. per mile.

D. DENYSE, } Proprietors."
J. FOUNTAIN, }

The fare was reduced in the same year to twelve and one-half cents. The "Dutch Reformed Church at Quarantine" is mentioned in advertisement in the *Staten Islander*, May 7th, 1856. The steamboat landing at Tompkinsville was often called Quarantine Landing. The hospitals were burned by the citizens in Sept., 1858. Previous to that event, the State purchased fifty acres of the Wolfe property near Seguine's Point, Prince's Bay. The buildings here were set on fire and destroyed in May, 1857, shortly after they became State property, and the two hospitals and cook and wash house erected in their place were destroyed by the same means in April, 1858. The site, however, was still used for Quarantine purposes, and until lately persons dying on the Quarantine Islands of contagious diseases, were interred there. The place is still locally known as the Quarantine. The present Boarding Station, often called Quarantine, is at Clifton. The Quarantine grounds at Tompkinsville, were surrounded by

a high brick wall, and the locality was often known as "Inside," that is inside of the wall.

Watering Place. The present Tompkinsville (See Springs, Ponds and Swamps.)

The Basin. At the foot of Clinton Street, Stapleton. Walling, 1859. Beers, 1874. A well-known locality. The present docks extend much further into the bay, and the old Basin has in consequence lost its importance.

Merry's Well. Capt. Merry lived on Beach Street, Stapleton, a number of years ago, and on his grounds, near the road, there was a very fine old well from which the neighbors were in the habit of drawing water. It was the local tradition, that a young girl had been thrown into the well, and that every seven years her ghost walked down Barton Street (now Union Street), to the bay.

Signal House. Located at the Narrows. Bew, 1781. Also called the Look Out.

Flag Staff. Located at the Narrows on map of 1797. Same as Signal House. Bayles, p. 209. Clute, pp. 20, 113.

The Telegraph. Same as Signal House and Flag Staff. Bayles, p. 241. Smith, 1836. Capt. Barnett's house is mentioned in advertisement in *Richmond Republican*, Feb'y 23d, 1828, as "on the bank of the river about a half mile north of the Telegraph at Fort Richmond, and about 20 minutes' walk from the Quarantine Ground." The Telegraph is mentioned by Thoreau in letter of July 21st, 1843, and pictured on an old print of about the same date. "Clifton and Telegraph Stage" is advertised in *Staaten Islander* during 1856 and 1857.

Elm Tree. A large tree that stood at the foot of New Dorp Lane, from which the present Elm Tree Light was named. On the map of 1797 is the following indorsement: "Large Elm tree standing by the shore, a mark for vessels leaving and going from New York to Amboy, Middletown and Brunswick." Elm Tree, with a picture of a tree, is given both by Smith, 1836, and Dripps, 1850. Old Elm Tree "where the Huguenots landed," is mentioned by Thoreau, letter of July 21st, 1843. (See Clute, pp. 199, 368.)

Three Elms. On South Beach, northeast of the Elm Tree Light. A locality among present-day fishermen. Two of the elms are now dead as a result of the encroachment of the sea. The trees are said to have been planted many years ago by the elder Barnes.

South Beach. An old name for the sandy south shore of the Island. The name now includes the hotels, merry-go-rounds, etc.

South Side or South Shore. South side of the Island. South Side is named as a Post Office in the N. Y. State Manual for 1872. In the Manual for 1873, Sea Side is mentioned in its place and is still the official name of the place.

North Side or North Shore. North side of the Island. Letters remaining in the North Shore Post Office, J. J. Clute, postmaster, are advertised in the *Staaten Islander*, Jan. 10th, 1857. The North Shore post office was situated, at least for a time, in the brick building on the north side of Richmond Terrace, close to the present West New Brighton railroad station. West New Brighton post office is first mentioned in the N. Y. State Manual for 1871.

East Shore. From Brighton Point to the Narrows.

Up Shore and Down Shore. The terms "Up Shore" (same as North Shore) and "Down Shore" (same as East Shore) were formerly in common use and are still occasionally employed by the railroad officials. Bayles, p. 3.

West Quarter. Applied in a general way to what is now known as Rossville. Bayles, p. 407.

Sandy Ground. Applied to what is now Rossville and its vicinity.

Manor of Bentley. The grant of 1163 acres of land at the southwest end of the Island, now Tottenville, was named after Christopher Billopp's vessel, the "Bentley," in which he sailed around Staten Island in less than twenty-four hours, and thus secured it to the Duke of York. Bayles, p. 102. (See Bentley Post Office and Arentsville.)

The Manor. Same as Cassiltown, Castle Town, or the later corrupted Castleton. The Manor of Castletown was the name of Gov. Dongan's country seat on the Island, and was called after the place of residence of the family in county Kildare, Ireland. The present Manor Road leads through a portion of the old Manor possessions. Bayles, pp. 95, 118, 261, 326.

Dongan Cedars or Dongan Woods. Near Four Corners. Clute, p. 122.

The Cave. A hole in the Serpentine Rock nearly opposite to the point where the Little Clove Road joins the Turnpike. It was dug by Housman and his negro servant shortly after the Revolution, in their search for gold.

Tangle-Wood. An old name for the tangled growth of bushes, young trees and cat-brier, on the westerly side of Bard Avenue, where it is crossed by Castleton Avenue. Part of this growth still remains on the southwest corner.

The Causeway. Constructed over Palmer's Run and connecting Castleton and Northfield. The Shore Road at the Causeway formerly ran several yards further north, where Bodine's lumber yard is now situated. Walling, 1859. In 1774 when the road from "Darby Doyle's ferry to Elizabeth Town Point" was laid out it was stated that it should go "over the Mill Dam as the Road now runs to the Dutch Church."

The Dike. The embankment on which the Shore Road passes over the meadow lying between Sailors' Snug Harbor and Livingston. Logan's Spring or Harbor Brook runs through this dike.

Long Dike. Extending from Bowman's Point toward the Corner Stake Light at the mouth of Newark Bay.

Old Fresh Kills Bridge. Also known as Plank Road Bridge, Draw Bridge (Walling, 1859), Garretson's Bridge and Long Bridge. Almost all traces of this bridge, which once connected portions of the Port Richmond and Fresh Kills Plank Roads, have now disappeared. In December, 1856, an advertisement appeared in the *Staaten Islander*, stating that "the bridges and the causeway over the Fresh Kills Creek and Meadows from the Fresh Kills to DePuy's Corner at Springville" would be sold at public auction on the 20th of the month. In the issue of Dec. 31st, 1856, under the heading of "That Bridge," appears the following: "The Pt. Richmond and Fresh Kills Plank Road Bridge, which was recently offered to the county for \$2,000, has been sold at auction to Mr. Jacob Garretson, for six hundred and one dollars." Mr. Jacob C. Garretson subsequently offered (*Staaten Islander*, Jan. 3d, 1856) to place the bridge and causeways leading thereto in good condition, provided the towns of Northfield and Westfield would each pay \$633.33. (See Church Road and Garretson's Road.) The County has recently had a new bridge built on the site of the old one.

The Bend. A bend in the Shore Road (Richmond Terrace) between Davis and Bement Avenues.

Iron Mines. Located principally on Ocean Hill, near Ocean Terrace Road, and

on Todt Hill near Todt Hill Road.

Four Corners Iron Mines. Just east of Jewett Avenue, near the Turnpike. The abandoned diggings, now filled with water, are known as the "Iron Mine Ponds."

Clay Beds. At various places on both sides of Fresh Kills Road at Kreischerville and Green Ridge. There are also clay beds on the Prince's Bay side of the Island.

Old Forts. The Dutch had their block-house at the Narrows; Washington his lookout, from whence came the tidings that the British fleet was near; the British their earth-works, and lastly the Union its more massive forts. A part of this eminence was once known as "Little Fort Hill." Many earth-works were thrown up along the shores of the Island, where the British, in the days of the Revolution, had sentinels stationed, particularly opposite New Jersey, so that they might watch the Americans on the other side of the Kill. Thus were there troops stationed at New Blazing Star Ferry on Long Neck, at Old Blazing Star Ferry, now Rossville, and at a point between this last mentioned station and Bentley. British, Waldeckers and Anspachers were encamped at their fortifications near the Watering Place. There was also an earth-work at Red Bank, on Bunker, Seguire's or Light House Hill, overlooking Prince's Bay. Col. Dongan and Col. Allen, when attacked by the Americans near the Old Blazing Star Ferry, fell back to these latter entrenchments which it is said were too strong for their fatigued pursuers to press against. In the war of 1812, fortifications were again erected on the bluff at Prince's Bay, and the stones were afterward used in building the light-house. Modern changes of various kinds have destroyed many of the old earth-works, and the most noticeable now remaining, are the two on Fort Hill, one on the hill back of Richmond, and one on Pavilion Hill at Tompkinsville. The larger of the earth-works on Fort Hill is situated at the end of Fort Street, on what is now called Knyphausen Heights, after the Hessian general stationed on the Island during the Revolution. The old British fort has been divided between two owners in modern days, but is still tree-covered and picturesque. It is square, with the corners pointing north, south, east and west, and the sides measured along the top of the breast-work, are about eighty feet in length, though they were probably somewhat less when the embankment stood higher in the days of the Revolution. The entrance is on the north-east side, which is also the most approachable, and the only place where the ditch is filled in. In parts, the ditch is fifteen feet below the top of the embankment, the sides of which are still quite steep.

The second earth-work in importance and size on Fort Hill, is in a field at the corner of what is now Bismarck and Second Avenues, and a portion of the embankment has been dug away in making the last named road. The mound is circular with a diameter of about seventy-five feet, and is no more to-day than a low ridge of earth with a corresponding shallow trench within.

The earth-work on the most northern part of Pavilion Hill commands a view of all the bay, and the hill is naturally so steep, that its situation is particularly advantageous. It is constructed on the same plan as the one last mentioned, only in this case the circuit is not entire. The trench faces the water and is irregular, that portion completed indicating a circle of about ninety feet in diameter. It is much nearer the bay than the other forts mentioned, and occupies about the same position on the southeast to the main earth-work on Fort Hill, as did the one to the north on the top of the steep terrace where the Hotel Castleton now stands. One commanded an extensive view of the Kill Van Kull, and the other of the bay, while both were overlooked by the main fortification.

Of all the earth-works, the one on Crocheron's, Geib's or old Fort Hill, to the northwest of Richmond village, occupies the most pleasing site as far as the surround-

ings are concerned. The view is largely composed of wooded hills, and on one side only a few houses meet the eye. Richmond Kill on the southwest and west winding tortuously through the meadows, several hundred feet below, probably does not show many more signs of advancing civilization to-day than it did when the old fort was occupied by the British. The earth-work is now entirely overgrown with a semi-wild vegetation, consisting of cedars, seedling cherries, hackberry, mulberry and some old apple and pear trees, that have been planted near the surrounding trench. One of the cedars on the top of the embankment, measures four feet four inches in circumference, and evidently dates from the time the British left the Island. There are also two Lombardy poplars on the edge of the embankment, that were planted years ago, and which certainly serve to make the place more conspicuous. The Huguenots brought numbers of them to the Island, and perhaps a LaTourette or a Journeay planted these trees.

In outline the old fort is square, with the exception that the southwest side facing the Kill, bulges slightly. As in the earth-work on Fort Hill the corners point north, east, south and west, and the entrance is on the northeast side, which is the most easy of access. On this side also, the hill has been dug away to furnish earth for the embankments, though nearly all signs of the work have now been obliterated. Each side of this rectangular fort measures about forty-four feet along the top, and on the southwest the descent to the Kill is as precipitous as the nature of the soft, crumbling serpentine rock will permit, but from the other points the fort is more approachable. This old earth-work is called Look-Out Place in Beers' Atlas, and Fort Richmond in the Proceedings of the Natural Science Association, Vol. III., p. 53. Fort Izard is said to have been one of its names, but this is given on mere report. Bayles, pp. 192, 193, 209, 237, 247, 259.

The Fort. The name usually applied to the United States fortifications at the Narrows. Blood, 1845, shows forts Richmond and Tompkins located on the State Land; Walling, 1859, forts Richmond and Tompkins, and battery Hudson; and Beers, 1874, forts Tompkins and Wadsworth.

State Land. At the Narrows. Where the United States fortifications are now located. State Land is shown by Blood, 1845. The State Grounds are mentioned in the Woman's Club Edition of the *Staten Islander*, May 30th, 1895.

Burnt House. On the edge of the meadow at Great Fresh Kill and southwest of Lake's Meadow Island. The ruins of the Burnt House were plainly in sight from the Kill, and were for many years a land mark among boatmen. "Burnt House" is shown by Dripps, 1850.

Bleak House. A nickname for the Livingston residence, now the railroad station at Livingston. It was so called because of its exposed position.

Common Woods. An old name for a tract of woodland near the Amboy Road and crossed by what is now Prince's Bay Road. Mentioned in old deeds.

Commons. At Chelsea. "B'd N. by land of John Simonson, E. and S. by the Commons and W. by Chelsea Road; with house $\frac{1}{4}$ acre." "B'd N. by land of Eder Freeland, E. by land of Charles Mersereau, S. by land of N. J. Egbert and W. by the Commons, 5 acres." Adv. State Tax Sale, Dec. 1890. The open fields near the corner of the Mill Road and New Dorp Lane are locally known as the Commons. (See Sunset Hill.)

Jones' Wolf-pit. Abraham Jones owned a farm on what is now known as Jones' Road or Rockland Avenue, and his nearest neighbor lived over on the Willow Brook Road. A path led northeast through the woods to this neighbor's dwell-

ing, and when the families visited in the evening, they were obliged to carry fire-brands to frighten the wolves. Not far from the path, Jones dug a wolf-pit, that may still be seen. In order to entrap the wolves, the pit was covered with dead sticks and leaves, and a piece of meat suspended from an overhanging sapling. The animals would jump for this, and fall through the frail support into the deep hole. Mr. John J. Corson has informed me that, when a young man, he and a companion tried to lift out of the pit all of the stones that had been thrown therein, but owing to the size of many of the boulders, they abandoned the task, and so never discovered its actual depth. The local history states "that in 1698 Thomas Stillwell received fifteen shillings for a wolf, and Cornelius Tysen received one pound for a wolf's head. Different bounties were offered for animals of different sex and age, as was the custom in many counties of the state." Bayles, p. 31. Many years ago, the land was cleared about the Wolf-pit, but it is now covered with woods again and is known on the farm as the "Wolf-pit Section." There is also the "Big White-wood Section," and the "Fox-hole Section," this last being so named because in old time foxes were in the habit of digging their burrows in this particular part of the wood.

The Signs. A mysterious black dog, as large as a horse, is said to have frequented a place called the "Signs." Bayles, p. 147. This locality is reported to have been at the present Signs Road, near Bull's Head.

Haunted Woods. On Old Town Road. Bayles, p. 147. There was also a Haunted Woods along the Amboy Road. (See Haunted Swamp.)

Haunted Bridge. On road to Amboy. Bayles, p. 147.

Haunted House. On the John J. Croke grounds at Giffords. Named on Dripps' map, 1872.

The Pines. A local name for a pine grove along the railroad track between Richmond Valley and Tottenville.

The Cedars. There are several places known by this name on the Island. One is the hill top near Griswold Avenue, northeast of Silver Lake, a cleared place among the cedars being used as a ball ground; also the upper part of Bement Avenue that once extended through cedars. A third is the Jones' property on Prospect Avenue, New Brighton. Blood, 1845. Walling, 1859. Still another is at Tottenville to the east of Ward's Point.

The Old Comp. The name applied in a general way to the country lying between Kreischerville and the Amboy Road.

Camps. During the last war the following camps were located on the Island: Washington, Arthur, Vanderbilt, Yates, Lafayette, Leslie, McClellan, Herndon, Morrison, Low, Ward, Scott, Decker and Sprague. Bayles, pp. 298, 303, 304, 308.

Stony Brook Settlement. One of the earliest on the Island, and situated near where the Amboy and Richmond Roads meet. Clute, p. 207. Bayles, pp. 81, 132. There is a Stony Brook village on Long Island.

Dover. Shown by Bellin, 1764, as occupying the site of what has been usually called Stony Brook.

Cucitold's Town, Cucklestowne. Early name of Richmond. Bayles, pp. 132, 143.

Soldier's Lots. Situated near the Willow Brook (Kruse) and Watchogue Roads. These are among the oldest roads on the Island. The Soldier's Lots are mentioned in the patent to Palmer in 1687. Bayles, pp. 115, 143. Also mentioned in the Land

Papers in connection with the petition of Samuel Blachford. (See Little Plains and Great Plain.)

Dutch Farms. Now called Concord. Maps of Concord were filed in County Clerk's office in 1853 and 1861.

New Lots at the Old Town. Mentioned in the survey for Abraham Lutine, Land Papers, 1685. At least a part of the New Lots extended along the present Richmond Road, adjacent to where it is joined by the Old Town Road. Some interesting information is contained in the following survey: "In Obedience to the Command of the Honorable Coll Thomas Dongan Governor General of all his Royall Highnesse Territoryes in America &c. I have surveyed and laid out for Hanse Christophell a Certaine Tract of Land being in the New Lotts of the old Towne in the County of Richmond being purchased out of a Tract of Land Granted to Peeter Bellew as by a Dutch Ground Breeife beginning on the South west side of a small Run of Water in the Valley of the Iron Hill which is the North West Corner of the first purchase of Thomas Stilwell and runs by his line South East three Degrees East three hundred and twenty Rodd to the Meadow and is in breadth upon a Right angle forty six Rodd and then in Length by the line of Nathaniel Brittan North West three Degrees Weast, but the land of Nathaniel Brittane was laid out Northeast and South East but it was by a Compasse that Varied three Degrees East ward two hundred sixty fouer Rodd to the Highway, by the side of the Iron Hill and is in breadth upon a Right Angle forty six Rodd to the South west Corner of the Land of Thomas Stilwell the whole being bounded to the Northeast by the Land of Thomas Stilwell to the South East by the Meadow and South Weast by the Land of Nathaniell Brittan and Northwest bye the Highway by the hill side Containing in all Eighty three ackres three Quarters and thirty two Rodd and likewise to have Meadow Ground proportion able performed this 4th Day of April 1685 by Phillip Welles Surv'r."

Oude Dorp or Old Town. The present Old Town Road leads from the Richmond Road toward the beach, where the original Oude Dorp was situated. Dankers & Sluyter state that this settlement consisted of seven houses in 1676. Bayles, pp. 64, 87. Clute, p. 16. Bew, 1781.

Nieuwe Dorp or New Town. The original New Dorp was located at the foot of New Dorp Lane, near the shore. Its position, as well as that of Old Town, is shown on the oldest maps of the Island. Bayles, p. 87.

Governor's Lot. "Description of a survey of 124 acres of land lying at ye New Dorp, on Staten Island formerly called ye Governor's lot, laid out for Obadiah Holmes, by Ro. Ryder Surveyor." Land Papers, 1677.

Valley Forge. On the Fresh Kills Road, between Rossville and Green Ridge. The LaForge farm lies on the westerly side of Swaim's or LaForge's Lane, which meets the Fresh Kills Road in a pleasant little valley through which flows Killifish Brook to the meadows. The last part of the name LaForge and the valley suggested the historic name of Valley Forge, which thus came to be applied to a vale on Staten Island.

Fresh Kills. The present Green Ridge.

Marshland or Marshfield. Same as Fresh Kills or Green Ridge. Marshland Post Office is mentioned in the N. Y. State Manual for 1874; in 1876 Green Ridge had taken its place.

Kleine Kill. An old name for Marshland or Green Ridge, meaning the Little River. Proceedings Nat. Sci. Association, Vol. III., p. 53.

Blazing Star. The old name for Rossville. Clute, pp. 233, 456. Bayles, p. 264. (See West Quarter and Sandy Ground.) The following is from the *Mirror*, Aug. 20th, 1837: "Rossville. Now did you ever! This is the new name of Old Blazing Star, and the alteration of its cognomen speaks well for the taste of its inhabitants." Several residents of the quiet village of Rossville have dreamt that treasure lay buried in certain fields and on the low hills about Ross' Cove. Under cover of the night, when their ridiculing neighbors could not see what they were about, they dug many holes, but only one man is reported to have found treasure, and that was discovered by accident. He was plowing in a field, when he unearthed an iron pot covered with a flat stone. He pocketed its contents, left his horse standing in the field, and took himself off to parts unknown. Another man dug over his cellar pursuant to the instructions received in a misleading dream, and two others dug a hole on a certain hill side, but seeing the devil skipping about in the dark, they ran for home, leaving their spades in the pit.

New Blazing Star. The present Linoleumville. Bayles, p. 185, Clute, p. 233. Map, 1797. (See Philadelphia Turnpike.)

Long Neck Village. Walling, 1859. Now Linoleumville and Travisville. Long Neck Post Office is named in the N. Y. State Manual for many years, but was discontinued in 1866. The devil often made his appearance on Long Neck during the early part of the century, but of late the people have become so much interested in the numerous books and newspapers that have fallen into their hands, that they have failed to note if he has been around. In old time, he was often seen skipping and running in the fine broad meadows in the neighborhood of Neck Creek, and would jump fences with the young and active farmers. Once and awhile, when the bars were exceptionally high, he would crawl under and thus try to deceive his honest playfellows. On one occasion two Staten Islanders were visiting over night in Rahway, N. J., and after the lamp was out, the bed began to toss like a little boat in a great sea. First one side would go up and then the other, and the men with difficulty prevented themselves from rolling onto the floor. The braver of the two whispered to his companion not to be afraid, that it was only the devil under the bed and he would soon get tired. This proved to be the case, for in a short time he quit his pranks and left these temperate and sober men to their peaceful slumbers.

Karle's or Charles' Neck Settlement. The present New Springville. Bayles, p. 579. Smith, 1836. An old woman, who lived on Karle's Neck, told her neighbors that she had sold herself to the devil and that they must not be surprised if they heard strange noises in her house. The next day she was not seen at the door, and the blinds remained closed, so the neighbors thought that it was excusable for them to break in and see what had been the result of the weird sounds, that had issued from the old dwelling. The door was accordingly battered down. The house was found to be in the greatest disorder; furniture overturned, the ashes from the hearth scattered about and in the midst the old woman lying dead on the floor, with her hair tied to the andirons. The neighbors reasoned that as she had sold herself to the devil, he had come in the night and taken her away. Another witch also lived in the vicinity, and when the people saw her approaching, they used to place a broomstick across the door and sprinkle mustard, thus preventing her from practicing her diabolical art.

Holland Hook Village. Corrupted into Hollin's or Howland's Hook. On the shore, west of Mariners' Harbor. Dripps, 1850. Walling, 1859. Clute, pp. 181, 233. "Hollandshook" is mentioned in advertisement in the *Richmond Republican*, June 18, 1829, and the *Mirror*, Sept. 8, 1838. An article on "Holland Hook," copied from *Harper's Weekly*, appeared in the *Staten Islander* in 1890.

Jacksonville. According to Clute, p. 181, this was a name for Holland Hook. The following two notices occur in the *Richmond Republican*, March 28th, 1829: "For Sale. That valuable brick house and Lot containing about one acre of Ground, at Jacksonville, on the north shore of Staten Island, fronting Newark Bay, and about half a mile from Mersereau's Ferry. The house is 34 ft by 19, formerly belonging to Capt. Neale. For further particulars apply to Jeremiah Pierson on the premises." "Auction. Will be exposed to sale on Saturday the 17th day of April next at Public Vendue, the house of Jeremiah Pierson, Jacksonville, two horses, two cows, a variety of carpenter's tools and kitchen furniture. Sale to commence at 10 o'clock, a. m."

Old Place. Situated in Northfield, on what was once called Tunissen's Neck, between Tunissen's or Old Place Creek and Bridge Creek. The name arose in this way: Religious services were once held in a house along the road, but the structure becoming dilapidated a new place was selected, which, however proved to be less convenient, so the earlier building was repaired and services were resumed at the "old place." Old Place, or more properly that portion of it now known as Summerville, was once called Skunk Town. Fortune Crocheron, who had been a slave, made a business of catching skunks and extracting the grease, which was sold as a cure for croup. After his death, the place gradually lost this name.

Summerville. A proposed name for Old Place. Clute, p. 234. Summerville is located in Beers' Atlas, at the corner of Washington Avenue and the Harbor Road. Old Place is also shown further to the west.

Watchogue. Situated a mile south of Old Place. Owing to the similarity of the name Watchogue to the Long Island town of Patchogue it has been thought that like the latter, it was of Indian origin. This, however, is a mistake, and the original name, which was Watch Oak, was acquired in the following way: The hamlet was first called Merrill Town, owing to the number of families of that name living in the vicinity. Among them was Ike Merrill, who owned a large farm, a portion of which was covered with oak timber. A man by the name of Brunsen was a neighbor of Merrill's. He was a smart man and is said to have been most clever in defending himself in court, in which, for one reason and another, he had considerable practice. Among other accomplishments, he could write with both hands at once, and, when he thought no one was looking, he could steal Ike Merrill's oak trees as well. This was known to Merrill, and when a neighbor called one day and asked for a certain farm hand, Merrill told him he was out "watching oaks." The Merrill farm was called in time "Watch Oak Farm"—the place where they watched the oaks. This has been corrupted into Watchogue, and this, unfortunately, changed to Bloomfield. According to Beers, 1874, the "Watch Oak Road" leads from Chelsea to Bloomfield. Clute (p. 228) maintains that this name is of Indian origin.

Butcherville. On the Watchogue, Butcherville, or Snake Road, between the Willow Brook and the Stone Roads. Butcherville Road is mentioned in Adv. State Tax Sale, Dec., 1890.

Granite Village. Dripps, 1850. Higginson, 1860. Graniteville. Walling, 1859.

Centerville. Old name for Castleton Corners. Dripps, 1850. Walling, 1859. Higginson, 1860.

Four Corners. Same as Castleton Corners. Castleton Corners Post Office is first mentioned in the N. Y. State Manual for 1872.

Robbins' Corners. At New Springville, where the Stone Road meets Poverty Lane. The residence of Nathaniel Robbins, a notorious character during the War of the Revolution. Clute, p. 114.

Morgan's Corner. At the present Egbertville. The following is from the *Mirror* of August 4th, 1838: "Valuable Real Estate. To be sold at public vendue on Tuesday the 18th day of September next at 2 o'clock in the afternoon, at the Court House in the village of Richmond, County of Richmond. All that certain lot, piece or parcel of land; situate lying and being in the town of Southfield on the Richmond and Quarantine road, known as Morgan's Corner; bounded on said road, easterly by land of Anthony Fountain, and on the South and West by land of Tunis Egbert. Containing within said bounds four acres be the same more or less; which above described premises are mortgaged by William Morgan, late of the town of Southfield, deceased, to the commissioners of loans for Richmond County, for securing the sum of sixty two dollars and fifty cents, and interest thereon arising. Conditions will be made known at the time of sale by

RICH'D CROCHERON, } Comm'rs of
WILLIAM MILLER, } Loans.

Richmond County, May 29th, 1838."

Phoenixville. A name for Bull's Head. Beers, 1874. Clute, p. 231.

London Bridge. A name for Bull's Head during the Revolution. Clute, p. 231. Also mentioned in notice of Sheriff's Sale in *Staaten Islander*, Jan. 25, 1854.

Mersereau's Ferry. "Port Richmond (late Mersereau's Ferry)" is mentioned in *Mirror*, Aug. 4th, 1838.

Bristol or New Bristol. Old name for Port Richmond. Clute, p. 221. In the *Mirror*, March 17th, 1838, there is an article on the improvements at "Mersereau's Ferry or New Bristol." New Bristol is shown by Burr, 1852. Cyrene is said to have been a proposed name for Port Richmond.

Irrington. Map of land at Irrington or Mersereau's Ferry, Staten Island, Filed Aug. 6, 1842. No. 28.

Cityville. This is given by Clute, p. 221, as an old name for Port Richmond. The Cityville post office was, however, located at Factoryville (West New Brighton) as appears by the following heads of notices published by the same postmaster: "List of Letters remaining in the City Ville Post Office, June 30th, 1835." D. V. N. Mersereau, P. M. *Free Press*, July 11th, 1835. "List of Letters remaining in the Post Office at Factoryville, Sept. 30th, 1835." D. V. N. Mersereau, P. M. *Free Press*, Oct. 10th, 1835. On the 1st of January, 1839, Nathan Barrett, postmaster, published in the *Mirror*, a list of letters remaining in the Cityville Post Office. (See North Shore.) Cityville is shown by Burr, 1852.

Factoryville. West New Brighton. Map of the Village of Factoryville, owned and laid out by N. Barrett. Town of Castleton, S. I. Filed Aug. 20th, 1836. Factoryville or Castleton is given by Dripp, 1850. The steamboat landing at Factoryville was called Castleton Landing. Walling, 1859. Higginson, 1860. Bayles, p. 264.

Elliottville. Foot of Bard Avenue; the present Livingston. Dripps, 1850. Dripps, 1872. Named after Dr. S. M. Elliott, oculist. On Walling's map of 1859 there is a bird's eye view of Elliottville.

South Elliottville. On Bard Avenue, south of Castleton Avenue. Walling, 1859.

Brighton Park. Placed between Franklin and York Avenues by Higginson, 1860. This property is commonly spoken of as Hamilton Park. Beers, 1874.

Jackson Park. Corner of Franklin Avenue and Third Street, New Brighton.

Fiedler's Park. On the Turnpike, near Pavilion Hill. Dripps, 1872.

Bay City. Mentioned in *Staaten Islander*, March 4th, 1857. Map of the proposed village of Bay City, including Tompkinsville and Stapleton, was filed 15th, February, 1859. No. 164.

Washington Square. The park at Stapleton. Map filed June 5th, 1867. No. 226.

Prospect Square. At Stone Street and the Richmond Road, Middletown. Map filed May 4th, 1852. No. 96.

Bay View Post Office. At Clifton. Named in the N. Y. State Manuals from 1858 to 1863 inclusive, after which it was discontinued. Joseph Feeny was postmaster in 1858 and James Kelly for the succeeding five years.

New-Berry Ville. Near Concord and traversed by the track of the Staten Island Railroad. Map of New-Berry Ville filed June 3d, 1853 (No. 113), showing Military Parade Ground and Columbian Park as portions of the property. *Staaten Islander*, Jan. 26th, 1856.

Clifton Park or Pagoda. At the head of Simonson Avenue, Clifton. Shown on map of New-Berry Ville, filed June 3d, 1853. The park is shown by Walling, 1859. "Simpson Gordon, Florist, &c., Vanderbilt Ave. near the Pagoda * * *" advertises in the *Staaten Islander*, Feb'y 28th, 1855.

Oaklands. At New York Avenue, Tompkins Avenue and the Finger Board Road. "Clifton Avenue or Finger Board Road" is shown on the map filed Dec. 21st, 1857. No. 159.

Linden Park. Between the Old Town Road and Garretsons. The old Burgher farm. Map filed 4th of June, 1870. No. 284. Dripps, 1872.

Grand View Park on Castleton Heights. Along the Todt Hill Road, Middletown. On map filed Dec. 22nd, 1869, No. 268, the Todt Hill Road is called Grand View Avenue, and Hillside, Crown Point, Park Place and Annfield Place are given as names for sections of the property. (See Castleton Heights.)

Ocean View. On the Richmond Road near Grant City. The Samuel Barton farm. Map filed 5th of June, 1873, No. 332. An Ocean View of later date, is at Giffords.

Richmond Park. On the Richmond Road between Egbertville and Richmond. Dripps, 1872.

Sea View Park. The Sea View Park Association owned the one half mile race course near the present New Dorp railroad station. Beers, 1874. There was also another race course at the foot of New Dorp Lane.

Oceanville. At New Dorp Lane. Map filed April 19th, 1853, No. 110.

Oceana. At New Dorp Lane, near the shore. Dripps, 1850. Higginson, 1860.

Cedar Grove. Near Oceana, at the foot of New Dorp Lane. Dripps, 1850. Higginson, 1860. Dripps, 1872.

Court House. Old name for the railroad station at Oakwood.

Newton. The present Giffords. Dripps, 1850. Higginson, 1860.

Clarendon. Near the shore at Great Kill. Shown as a locality by Higginson, 1860. Dripps, 1850, gives Clarendon as the residence of E. R. Bennet; the White House, as the residence of W. H. Vanderbilt; Huguenot Farm, as the residence of Dr. E. Clark; Mooreland, as the residence of T. W. C. Moore; Wheat Sheaf Farm, as the

residence of W. A. Seely; Hay Hill, as the residence of C. E. Leveridge; and Oakland, as the residence of the landscape architect Frederick Law Olmsted. All of these farms were on the South Side, from New Dorp Lane to the present Eltingville.

Lemon Creek Post Office. Mentioned in the N. Y. State Manual for 1859. In 1861 Prince's Bay Post Office had taken its place.

Hawthorne Place. Near the shore at Red Bank and west of the Prince's Bay light house. Shown as a locality by Dripps, 1850.

Algernon. "Map of the Staten Island North and South Shore Railroad." Filed Jan. 9, 1883, No. 394. The terminal station of this proposed railroad, at the shore near Eltingville.

Uncle Nick Lot. "Subdivisions of the Uncle Nick Lot, Annadale, S. I. Property of Mrs. Anna S. Seguine." Filed May 20th, 1871, No. 303.

Bloomingview. The present Huguenot. Colton, 1846. Dripps, 1850. Walling, 1859. Bayles, p. 436. It is possible that what is sometimes called the Bloomingdale Road (now Rossville Road) should be Bloomingview Road, but the first mentioned name is the one said to have been in use.

Unionville. Between Tottenville and the Billopp House. Dripps, 1850. Higginson, 1860.

Bentley. A name for the post office, at what is now called Tottenville. The N. Y. State Manual mentions Bentley Post Office in 1861; in 1862, Tottenville is named in its place. Bentley is mentioned in the *Staten Islander*, Jan. 23 and April 23, 1856, and the place should never have received any other name. (See Manor of Bentley.)

Arentsville. A proposed name for Tottenville. The "Arentsville Times" is said to have been published for a short time.

Biddle Grove. At Tottenville. Map of the Biddle Grove Property. Filed June 30th, 1870. Beers, 1874.

Charlestown. A name for Kreischerville.

Androvetteville. A name for Kreischerville. The place should have been permanently so called as it is the residence of many members of the old Staten Island Huguenot family of Androvette. "Androvettetown is beautifully located near the margin of the river. It contains a mine of wealth both as regards purity of clay and pretty ladies." *Staten Islander*, March 8th, 1856.

Allen or Van Allen Town. The southern part of Kreischerville on Van Allen Hill. Named after the Van Allen family. Unfortunately an effort is being made to change the name of that part of the Fresh Kills Road which extends from Van Allen Town to Tottenville, to River Side Avenue.

Pogardus Corners. At Woodrow, where the Woodrow Road and the Rossville Road meet. Named after C. Bogardus.

Pomona Grove. At Grove Avenue, Port Richmond. Map filed Nov. 19th, 1869. Adv. State Tax Sale, Dec. 1890.

Lowville. At Cedar Street and Granite Street, Elm Park, Northfield. Named after Daniel Low. Map filed June 28th, 1849, No. 63.

The Park. A local name including the dwellings facing Port Richmond Park.

Tuxedo. A nickname for a part of New Brighton; the end of Brighton Avenue, &c. A part of the Duck Pond district.

Rag-picker's Row. Several small houses on Minthorne Street, Tompkinsville, received this nickname many years ago. The corner one was occupied by Thomas Clark and in consequence of its position was known as Clark's Point. This point is mentioned in the *Staaten Islander*, June 14th, 1856.

The Nook. Angle formed by the meeting of Quin and Harrison Streets, Stapleton.

Battle Row. A nickname for McKeon Street, Stapleton. Said to be so called from the belligerent character of its residents.

The Lawn. A local name for the large field at the corner of Vanderbilt Avenue and Bay Street, Stapleton. Sometimes called Vanderbilt's Lawn, after its owner.

Carroll Town. Five or six small dwellings in a wooded hollow on Tompkins Avenue, and the present railroad track between Fort Wadsworth and Arrochar stations. Named after "Mattie" Carroll, a carter.

The Goose Patch. The open field between Westervelt Avenue and Jersey Street, New Brighton, now traversed by Crescent Street.

Silent Village. For a number of years there, were only a few small houses at the top of Davis Avenue, West New Brighton, and the settlement received the name of the Silent Village.

The Cottages. Some years ago, a number of small dwellings were built near the corner of Lafayette Avenue and the present Second Street, New Brighton, and the vicinity became known as "The Cottages." Later the neighborhood grew more wealthy, better dwellings were erected, including the Village Hall, and the district in consequence changed its name to "The Capitol." "New Brighton Cottages" are located on Blood's map, 1845.

The Orchard. A district of West New Brighton traversed by Barker Street. It was probably the site of Gov. Dongan's orchard. The hill side (See Cork Hill) occupied by Gov. Tompkins' orchard, was known by the same name.

Wapp's Park. A play ground bounded in part by Prospect, Bement and Burger Avenues, West New Brighton, and nicknamed by the boys of the vicinity. A renowned individual, whom the boys called Wapps, celebrated for her hard drinking and swearing, resided in the immediate vicinity and was a feature of the amusement afforded by the park. Wapps when tipsy would be seized with a church going desire and try to enter her neighbors' houses, believing that confession and kindred rites could be had within.

Yellow Row. A number of squalid yellow painted houses, on the west side of Broadway, near the Dye Works, West New Brighton, were once known as the Yellow Row.

Cork Town. A portion of West New Brighton village.

The Village. A local name for a part of West New Brighton.

Decker Town. A nickname for Travisville, because so many people by the name of Decker reside in the place. Many years ago two bachelor brothers by the name of Decker lived in Decker Town, each of them having a small pile of money in the cupboard. One wrongly accused the other of meddling with his possessions, which he said had suddenly grown much smaller. This unsettled the mind of the innocent brother, who ended his life with a razor, and the survivor, finding that he was miserable without him, hung himself to one of the rafters of his dwelling.

Jumping-off Place. A nickname for the end of the Shore Road at the bluff, at Holland Hook.

Merrill Town. An old name for Bloomfield. (Watchogue.)

Peanutville. A nickname for Chelsea. So called because its inhabitants in the long boat journey from New York to Chelsea landing, show their good sense by laying in a store of peanuts, wherewith to beguile the time.

New Paris or French Town. Nickname given to Grant City because so many French families reside there. This place has been misnamed Grand City on the railroad time tables for the past few years. There was a sign near the railroad track several years ago, that read "Grand City." In Beer's Atlas, Grant City is also called Ocean View. This is, however, an error, Ocean View being the name of adjacent property.

Seaman Town. A nickname for a row of houses in Richmond Village. *Staaten Islander*, Jan. 28, 1854.

Paradise or the Garden of Eden. Where Tompkins Avenue crosses Richmond Avenue, Clifton.

Morganville. A hamlet on Egbert Avenue, Middletown. Named after the Morgan family.

Tipperary Corners, New Dublin or Young Ireland. Nicknames for Egbertville.

Africa or Little Africa, Sandy Ground, Harrisville. Africa is a nickname for a negro settlement, near the Rossville Road, Westfield. Harrisville is the official name of the place. "At Harrisville, W. of Rossville road, b'd N. by lands of P. A. Ash, E. by lands of R. H. or Robert Dixon, S. by lands of Thomas Jefferson or Leven Purnell and W. by lands of Aaron Close." Adv. State Tax Sale, Dec., 1890.

Fiddler's Green. A nickname of a small district on Journeay Avenue, not far from Green Ridge. It was the residence of Reynolds, the fiddler.

The Plains. A local name for Pleasant Plains, Westfield.

Eel Town. A nickname for a portion of Pleasant Plains. "Eel Towners" are spoken of in the *Staaten Islander*, Dec. 31st, 1856. A few years ago an old time entertainment took place at Pleasant Plains, and the managers thought that to be consistent, they would say that it was to be held at "Ye Eel Towne," but the inhabitants were so indignant that the posters and hand bills had to be reprinted, leaving "Ye Eel Towne" out.

Skunk's Misery. Located along Sandy Brook, between Pleasant Plains and Prince's Bay. In the *Staaten Islander*, Dec. 12th, 1857, is the following item, under the head of "More Shooting": "A sad accident occurred on Tuesday near a small place called 'Skunk's Misery,' in this county, from negligence in firing at a target, with only a fence of hemlock boards to prevent the further progress of the balls." There are at least two other skunk's miseries on the Island. One is located at the foot of Red Lane, at Grant City, in the neighborhood of Egypt, and the other is near the Harbor Road, at Mariners' Harbor. All of these "miseries" are low wet places.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. V. No. 6.

APRIL 11th, 1896.

Meeting held at the residence of Mr. Arthur Hollick, New Brighton. The President in the chair.

The following new members were elected: M. E. Stone, New Brighton; John L. Dobson, New Brighton; F. Sillig, West New Brighton; Chas. W. Kennedy, West New Brighton.

Mr. Wm. T. Davis read the following account of

THE GREAT STORM OF JUNE, 1835.

In an old volume of the "*New York Free Press*," kindly loaned me by Mr. Ira K. Morris, there occurs under date of Saturday, June 27th, 1835, an account of a remarkable storm. It is headed a "New Jersey Tornado" and some of the most interesting paragraphs read as follows:

"On Friday last, between 4 and 5 o'clock p. m., a violent southwesterly wind struck the town of New Brunswick, N. J., demolishing at least one hundred and eighty buildings in its course, almost totally destroying Piscataway, and doing considerable damage in the vicinity of both places. * * * * Fragments of different kinds landed in several places on Staten Island. Several shingles of the largest size fell near the residence of Henry Crocheron, Esq., and branches of oak, (none of which grow on Staten Island in the direction from which they came), were scattered in different parts of the Island. Mr. Joseph Simonson, who resides about a mile from the north shore, was standing in his door on the evening of the gale, and distinctly saw several large fragments of shingles, boards, branches, etc., driven along at a furious speed, by a strong current of air, at an altitude of about eighty or a hundred

yards, while the air below was comparatively still; a piece of board, which he showed us, about three feet and a half in length, ten inches in width, and three quarters of an inch in thickness, fell within a few yards of his house. To use the words of a gentleman who witnessed the scene, 'the air was literally filled with fragments of all kinds for a mile around.' In this storm James O'C. Smith was killed at New Brunswick and Thomas W. Harper at Piscataway by falling timber. A woman was killed at Perth Amboy and many other persons injured.

It may be remembered that on the 14th of last July a similar storm, following a narrow though circuitous path, killed several people at Cherry Hill, N. J., and at Woodhaven, Long Island. Dwellings were overturned, a railroad station demolished and trees torn up by the roots. From the granite quarry on the Old Place road a black cloud could be seen in the northwest during this storm, but only a few big drops of rain fell on the hot rocks. There were mutterings of thunder and one flash of lightning.

In connection with the record breaking storms of the last few months, these memoranda may be of interest.

The following communication from Mr. H. W. Congdon was read:

FURTHER NOTES OF THE BARRED OWL

On March 14th of this year I again visited the barred owl's nest previously described in the Proceedings, in company with Mr. H. L. Beadel.

The female flew from the nest at the first tap on the tree with my gun barrel, and after lingering a short time, took a

longer flight and was not again seen. The eggs of this set are four in number—I believe the first time that this nest has yielded four—and measure respectively 1.75×1.56 , 1.85×1.56 , 1.95×1.56 , and 2.00×1.65 . Incubation had but just begun—three eggs showing quite a little blood, the fourth being almost fresh. It is interesting to note the difference in measurements of these eggs. Last year's set measured 1.83×1.65 , 1.89×1.69 , and 1.98×1.72 —showing that this year's set is very much more pointed, although it is probably—almost certainly—from the same bird. I have not the measurements of the other sets at hand. It would be well for some one to obtain and compare them. This is the fifth year that the nest has been known to us, and the fourth that eggs have been taken from it. It would be interesting for some member of the Association to go to the nest about the middle of April, and determine if this unfortunate bird lays two sets yearly—but by no means to take the eggs, as that would be apt to drive the bird away.

It may be interesting to note that on the same day—March 14th—I found a large flock of robins, and of purple finches, in this same patch of woods, all in full song. Along the road bluebirds and grackles were also seen in addition to numbers of the usual winter birds. The genial sun even thawed out several song sparrows sufficiently to give a weak imitation of the song of which we are all so fond.

Mr. Arthur Hollick read the following memoranda on

RECENT LITERATURE RELATING TO STATEN ISLAND.

Mineral Resources of New York State, by Fredk. J. H. Merrill, Ph D., Director New York State Museum. Bull. N. Y. State Mus., Vol. 3, No. 15, (Sept., 1895), with two maps.

Treats of the mineral resources of the State from both a geologic and economic standpoint. Credit is given to our members, Dr. N. L. Britton and Mr. Arthur Hollick, for assistance in regard to Richmond County. The Graniteville trap rock is mentioned on pp. 380 and 449, the clays on pp. 496 and 501, iron ores on pp. 530, 541 and 543 and the yellow gravel on p. 449. Descriptions throughout are exceedingly brief and the entire volume is little more than a directory and index.

Tom Grogan, by F. Hopkinson Smith. Century Mag. LI. (1895-96), pp. 238-250, 346-360, 616-629, 760-775, illustrated. The scenes in this interesting little piece of fiction are supposed to be enacted on Staten Island and some of the characters are not entirely unlike individuals with whom we have come in contact in our local affairs. The tyranny of trades unions and the ignorance or venality of petty public officials form the groundwork of the story.

MISCELLANEOUS MATERIAL EXHIBITED.

Dr. N. L. Britton presented a stone arrow point, found near the foot of Red Lane, New Dorp, a locality from which indian relics have not heretofore been reported.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. No. 7.

MAY 9th, 1896.

Meeting held at the residence of Mr. Thomas Craig, New Brighton. The President in the chair.

The following new members were elected: J. S. Davenport, New Brighton; H. L. Waldo, New Brighton; A. W. Johnston, Prince's Bay.

Mr. Arthur Hollick exhibited mounted specimens of leaves of *Liriodendron Tulipifera* L., collected at different periods in the age of the tree; also drawings of fossil species, and gave an account of what is known in regard to

THE TULIP TREE AND ITS ANCESTORS.

There are a number of facts in regard to this tree which are not only interesting in themselves but are of significance from the standpoint of evolution. In the first place, it is interesting botanically, because it belongs to a monotypic genus; that is to say, the tulip tree is the sole living representative of the genus *Liriodendron*. Like *Sequoia* and *Platanus* it represents a vanishing type, which had a great development in the past, reached a maximum, then declined, and is now represented by the one species which we call the tulip tree; known only in eastern North America and Asia. From a study of the fossil species, however, we know that the genus once contained numerous species which were widely distributed over both hemispheres and extended far into what is now the Arctic regions.

When we examine the leaves of the tulip tree, although they vary greatly, not only on different trees, but even on the same tree, there is one characteristic feature which is constant, viz.: the cuneate or notched apex. If, therefore, we en-

deavor to trace its relationship with any fossil leaves we now accept a notched or cuneate apex in these as a possible hint in that direction.

A good many years ago a leaf with a well defined notch at the apex was found in the Dakota sandstone of the West, which is middle cretaceous in age. The margin was entire, however, and without any indication of lateral lobes, and its relationship with the tulip tree was not suspected. It merely received the name *Phyllites obcordatus* Heer.

Later on leaves were found both in the Dakota sandstone and in the Amboy clays of New Jersey and Staten Island, which showed, in addition to the notched apex, a slightly irregular or wavy margin, indicating an approach towards lobing. The relationship of these was at once recognized and the species *Liriodendron primævum* Newb. was founded.

Then followed discoveries thick and fast of leaves with well developed lobes, many abnormally so, but all with the tell-tale notched or cuneate apex. The nervation also was carefully studied and the true relationship of the entire-margined leaves, like *Phyllites obcordatus*, began to be recognized. The late Dr. J. S. Newberry proposed for this type the generic name *Liriodendropsis*, which will appear as a new genus in a forthcoming monograph on the "Flora of the Amboy Clays," soon to be issued by the United States Geological Survey.

When we pass upward from the cretaceous horizons into those of the tertiary, we find leaves which are hardly to be distinguished from those of our living tree.

All our forest trees have similar records, but in regard to very few have we been able to trace the ancestry back in such a convincing manner. Nor have we by any means reached the full measure of our knowledge in regard to it. Several forms which I have recently found in collections made on Martha's Vineyard and Long Island show intermediate steps and fill up former gaps in the series in a most gratifying manner.

Another point of view, which is of interest to the evolutionist, is the comparison which may be made between the development of the genus in the past and that of the individual tree at the present time. On the theory of evolution an individual tulip tree of to-day ought to show, in its development from a seedling to a mature tree, some indications of the successive stages of evolution through which the genus passed in geologic time. A comparison will at once show that such is the case. The leaves of seedlings are almost identical with those of *Phyllites obcordatus* and *Liriodendropsis*. Others, particularly from young shoots and saplings, may be recognized as similar to *Liriodendron primævum*, and it is not until the leaves of more or less mature trees are seen that the lobing becomes so pronounced and constant that they may be compared with the later types of the cretaceous and tertiary horizons.

Finally, I will call attention to one other point. In certain species (*Liriodendron populoides* Lesq. and *Liriodendron alatum* Newb.) the petiole is winged. I first called attention to these wings in the Bulletin of the Torrey Botanical Club, xxi. (Nov., 1894,) and accepted a theory previously suggested by other authorities for other genera, that such appendages may represent former basal lobes of the leaf blade which have become more and more detached, finally becoming wings on the petiole and eventually becoming reduced to the condition of stipules at the base of the petiole. I was criticised for accepting the theory, both on general principles and for the special reason that no signs of this process of de-

velopment had ever been noted in the tulip tree. I was certain, however, that on the principle of atavism, or reversion to former ancestral characters, a living tree would some day produce these wings and that I would come across it. Such has been the case, and in a recent specimen sent me from New Jersey it is impossible to say whether the appendages on the petiole are portions of the lower part of the leaf blade which have grown down, or stipules which have become attached and grown upwards.

This is but a brief outline of the many facts which have come into my possession relating to the subject, and one of my objects in bringing it forward at this time and in this shape is the hope that our members may become sufficiently interested to examine all young tulip trees, shoots from old stumps, &c., which they may come across, and to collect any unusual or abnormal specimens which may be found.

Mr. Hollick also read the following memorandum on

RECENT LITERATURE RELATING TO STATEN ISLAND.

The Potomac Formation. Lester F. Ward. 15th Ann. Rept. U. S. Geol. Surv. 1893-94 [Washington, 1895] 307-397, pl. ii.-iv. and illust. in text.

The name, Potomac Formation, is taken to include all the series of deposits of the Atlantic coastal plain region, from the base of the cretaceous to and including the Amboy clays, of which the Kreischer-ville clays are a part. Incidental references to the fossil plants found on Staten Island are given and the term "Island Series" is adopted for the clay beds which extend through Staten Island, Long Island and Martha's Vineyard.

MISCELLANEOUS NOTES.

Mr. Walter C. Kerr presented a specimen of *Chalina arbuscula* Ver., found on the shore near Fort Wadsworth, also spicules from it under the microscope.

Mr. E. C. Bridgman reported that two specimens of the sheepshead (*Lebias ovinus*) had been born in one of his aquaria, but that, unfortunately, he was unable to say whether they represented oviparous or viviparous birth.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. No. 8.

JUNE 13th, 1896.

Meeting held at the residence of Mr. J. B. Hillyer, West New Brighton.

In the absence of the President Mr Wm. T. Davis was elected chairman *pro tem*. Capt. Robt. D. Wainwright, Eltingville, was elected an active member.

The following paper, by Mr. Ira K. Morris, was read by title :

LT. COLONEL SIMCOE AND THE QUEEN'S RANGERS ON STATEN ISLAND.

COMPILED BY IRA K. MORRIS

It is certain that no organization in the British army during the American Revolution became more familiarly known in this section of the country than the "Queen's Rangers," which were commanded by Lieutenant Colonel John Graves Simcoe. Indeed, this notorious man can consistently be called "the Mosby of the Revolution," so strongly did these two men resemble each other in their service in the field.

Colonel Simcoe was a son of Captain John Simcoe, of the English navy, who served with distinction in the expedition against Quebec, in Canada, in 1759, and in which he lost his life, at the age of forty-five years. He was a native of Northamptonshire, England.

Colonel Simcoe was a mere child at the time of his father's death, and he was liberally educated by his mother. At the age of nineteen he obtained an ensign's commission in the 35th regiment of the British line. He did not embark with his regiment, but landed at Boston on the day of the battle of Bunker Hill. He served for a time as adjutant, but soon purchased a captain's commission in the 40th regiment, which he commanded at the battle of Brandywine, where he was

wounded, on the 11th of September, 1777. On the 15th of October following Captain Simcoe was promoted to Major of the Queen's Rangers.

The Queen's Rangers were originally raised in Connecticut and the vicinity of New York, by Colonel Rogers, and their duties were principally those of scouts or light cavalry. They were all Americans, and called in those days, "Loyalists." When Major Simcoe joined the regiment it had by hardships and neglect been reduced in numbers; many gentlemen of the Southern colonies, who had joined Lord Dunmore, were appointed to supersede those who were not considered competent for the commissions they had hitherto borne. To these were added some volunteers from the army, the whole consisting of young men, anxious to enter the British service.

The Queen's Rangers consisted of two companies of dragoons, one of Highlanders, a company of Yagers, two troops of cavalry, one company of artillery, and five companies of light infantry, a large part of one company being native Staten Islanders. Colonel Rogers, the first commandant, was succeeded by Colonel French, he by Colonel Mawhood, he by Major Weys, he by Major Weymess, and he by Lieut. Colonel Simcoe.

From "Simcoe's Military Journal," "Livingston's Gazette," Bolton's "History of Westchester County" and other works I have gleaned the following names of officers of the Queen's Rangers, who served on Staten Island:

Lieutenant-Colonel—John Graves Simcoe.

Majors—Armstrong, Grymes, Ross, Waymess, Weys.

Captains—Aulthause, Agnew, Beckwith, Blucke, Bronson, Cooke, Diemer, Ewald, Hanson, Hutchinson, Kerr, McCrea, McGill, James, McKay, Moncrieffe, McRae, Murray, Sandford, Saunders, Shank, Shaw, Smyth, Stevenson, Thomas, Whitlock, Wickham and Wreden.

Lieutenants—Allen, Dunlop, Fitzpatrick, Holland, Lawler, McNab, McLeod, Murray, Rynd, Spencer and Wilson.

Surgeons—Kellock and McCauley.

Adjutant—Ormond.

Quartermaster—McGill.

Chaplain—Agnew.

Ensign—Proctor.

Sergeants—Adams, McDonald, McLaughlin, McPherson, Ritchie and Wright.

Corporals—Burt and Franks.

Cornets—Jones, Merrett, Ficker and Wolsey.

Trumpeters—Barney and French.

Immediately after Colonel Simcoe took command of this regiment he issued the following advertisement in Rivingston's Royal Gazette, in New York city :

ALL ASPIRING HEROES

have now an opportunity of distinguishing themselves by joining

THE QUEEN'S RANGERS HUIZZARS,
commanded by

Lieutenant-Colonel Simcoe.

Any spirited young man will receive every encouragement, be immediately mounted on an elegant horse, and furnished with clothing, accoutrements, etc., to the amount of Forty Guineas, by applying to Cornet Spencer, at his quarters, No. 1033 Water street, or his rendezvous, Hewett's Tavern, near the Coffee House, and the depot at Brandywine, on Golden Hill.

Whoever brings a Recruit shall instantly receive Two Guineas.

Vivant rex et regina.

I have compiled from the works of Colonel Simcoe his own accounts of his service on Staten Island, keeping strictly to his own language, believing that, as an historical record, it would be unjust to the original writer and the reader of today to cause a change in either form or phrase:

* * * * *

On the 9th of October, 1778, [the

Queen's Rangers being at Oyster Bay, Long Island], it was hinted to Lieut. Col. Simcoe to hold his corps in readiness for embarkation. On the 19th it marched for that purpose; the cavalry to Jericho, where they were to remain under the command of Lieut-Col. Fulton, and the infantry to Jamaica, which proceeded to Yellow-hook, and embarked on the 24th. Earl Cornwallis commanded this expedition, consisting of the 7th, 23d, 22d, 33d, 57th regiments, Rangers, and Volunteers of Ireland, commanded by Lord Rawdon; it was supposed to be intended for Jamaica, at that time presumed to be threatened with an invasion from M. D'Estaing. On intelligence being received that his designs were pointed elsewhere, the troops were re-landed, and were ordered to continue in readiness to embark at the shortest notice. The Queen's Rangers marched to Richmond, on Staten Island. They relieved a regiment which had been very sickly while there. Lieut-Col. Simcoe immediately ordered their huts to be destroyed, and encamped his corps. Signals, in case of alarm, were established on the Island by General Patterson, who commanded there.

There was a general rumor of an intended attack on New York. Lieut-Col. Simcoe had information that fifty flat-boats, upon carriages, capable of holding seventy men each, were on the road from the Delaware to Washington's army, and that they had been assembled to Van Vacter's bridge, upon the Raritan. He proposed to the Commander-in-chief to burn them. Sir Henry Clinton approved of his plan, as did Earl Cornwallis, and directed it to be put into execution. Colonel Lee, with his cavalry, had been at Monmouth. Sir Henry Clinton, upon Lieut-Col. Simcoe's application to him for intelligence of this corps, told him that by the best information he had, Lee was gone from that part of the country. There were no other troops in the vicinity; the Jersey militia only, and those, tumultuously assembled at the moment of the execution of the enterprise, could possibly impede it. The coast of Jersey had been the common receptacle of the disaffected from Staten, Long and York Islands, on the British troops taking possession of them. Of course they were the most virulent in their principles, and, by the custom they had of attacking, from their coverts, the British foraging parties, in 1776, and insulting their very outposts, they had acquired a great degree of self-confidence and activity. Lieut-Col. Simcoe's plan was to burn the boats with as much expedition as possible; to return with silence to the heights beyond the town of Brunswick before

day ; there to show himself, to entice all who might follow him into an ambuscade, and if he found that his remaining in the Jerseys could affect any valuable purpose, the Commander-in-Chief proposed to reinforce him. To execute this purpose, he was to draw his cavalry from Jericho, Long Island, by easy marches to Staten Island. Stuart, an active and gallant man, a native of New Jersey, commanded some calvary on that [Staten] Island. These were to be added to him ; and he requested ten guides. Three hundred infantry of the Queen's Rangers, with their artillery, were also to accompany him.

Two days were lost by a misunderstanding of the General's order, the Hussars of the Queen's Rangers only being sent to Jericho, without Captain Sanford's troop, which was not merely necessary in regard to numbers, but particularly wished for, as it was known that Captain Sandford, when quartermaster of the guards, had frequently been on foraging parties in the country he was to pass through. On the 25th of October, by eight o'clock at night, the detachment, which had been detailed, marched to Billopp's Point, where they were to embark. That the enterprise might be effectually concealed, Lieut-Col. Simcoe described a man, as a rebel spy, to be on the Island, and endeavoring to escape to New Jersey. A great reward was offered for taking him, and the militia of the Island were watching all the places where it was possible for any man to go from, in order to apprehend him. The batteaux and boats, which were appointed to be at Billopp's Point, so as to pass the whole over by twelve o'clock at night, did not arrive until three o'clock in the morning. No time was lost ; the infantry of the Queen's Rangers landed ; they ambuscaded every avenue of the town [Perth Amboy] ; the cavalry followed as soon as possible. As soon as it was formed, Lieut-Col. Simcoe called together the officers ; he told them of his plan, "that he meant to burn the boats at Van Vacter's bridge, and crossing the Raritan, at Hillsborough, to return by the road to Brunswick and making a circuit to avoid that place as soon as he came near it, to discover himself when beyond it, on the heights where the General Redoubts stood while the British troops were cantoned there, and where the Queen's Rangers afterwards had been encamped ; and to entice the militia, if possible, to follow him into an ambuscade in which the infantry would lay for them at South River bridge.

Major Armstrong was instructed to re-embark, as soon as the cavalry marched, and to land on the opposite side of the

Raritan, at South Amboy ; he was then, with the utmost despatch and silence, to proceed to South River bridge, six miles from South Amboy, where he was to ambuscade himself, without passing the bridge or taking it up. A smaller creek falls into this river on South Amboy side. Into the peninsula formed by these streams Lieut-Col. Simcoe hoped to allure some Jersey militia.

* * * * *

Here follows a detailed account of the raid into New Jersey, in the vicinity of Morristown, then the headquarters of the Continental Army. Lieut-Col. Simcoe was badly wounded and was captured. He was taken to the military prison at Burlington, N. J., where he was soon afterward joined by Colonel Christopher Billopp, commander of the Staten Island Militia. Major Armstrong assumed command of the Queen's Rangers. The account continues :

At South River the cavalry joined Major Armstrong ; he had perfectly succeeded in arriving at his post undiscovered, and, ambuscading himself, had taken several prisoners. He marched back to South Amboy, and re-embarked without opposition, exchanging some of the bad horses of the corps for better ones, which he had taken with the prisoners. The alarm through the country was general. Wayne was detached from Washington's camp in the highlands, with the light troops, and marched fourteen miles that night and thirty the next day. Colonel Lee was in Monmouth County, as it was said, fell back toward the Delaware. The Queen's Rangers returned to Richmond that evening ; the cavalry had marched upwards of eighty miles, without halting or refreshment, and the infantry thirty.

In the distribution of quarters for the remaining winter, Richmond was allotted to the Queen's Rangers. The post was in the centre of Staten Island, and consisted of three bad redoubts, so constructed, at various times and in such a manner as to be of little mutual assistance. The spaces between these redoubts had been occupied by the huts of the troops, wretchedly made of mud. These Lieut-Colonel Simcoe had thrown down, and his purpose was to build ranges of log houses, which might join the redoubts, and being loop-holed, might become a very defensible curtain. Major Armstrong followed the plan, and set the regiment about its execution, in parties adapted to the different purposes of felling the timber, sawing it, and making

shingles for the roofings. In the beginning of December the regiment was ordered to embark; which order was, soon after, countermanded.

On the last day of December Lieut. Colonel Simcoe returned to Staten Island from his imprisonment. He was mortified to find the expedition, under the Commander-in-Chief, had failed; especially as, upon his landing at the Island, he received a letter from Major André, Adjutant General, saying, "If this meets you a free man, prepare your regiment for embarkation, and hasten to New York yourself."

He joined the corps at Richmond. Major Armstrong had been indefatigable in getting the regiment huddled in a manner which rendered their post comfortable and defensible, and they soon found the advantage of their very extraordinary labor. The day which Lieut. Col. Simcoe passed the Sound was the last on which it became navigable for a considerable time, the frost setting in with most unusual inclemency, and, by the 10th of January, the communication with New York was totally shut up by floating ice; and General Stirling was reduced to the necessity of restraining the troops to half allowance of provisions, but with every precaution to impress the inhabitants and soldiers with the belief that this restriction was precautionary against the possibility of the communication being closed for several weeks; and care was taken to investigate what resources of fresh provisions might be obtained from the Island.

The Sound, which divided Staten Island from the Jerseys, being totally frozen over and capable of bearing cannon, information was received that several of the rebel Generals had been openly measuring the thickness of the ice, and it was universally rumored that an attack was soon to take place upon Staten Island. General Stirling commanded there, and he was with the main body at the watering place, the heights of which [Pavilion Hill] were occupied by several redoubts. Colonel Lord Rawdon, with the Volunteers of Ireland, was quartered near a redoubt at the foot of the Narrows; and Lieut. Col. Simcoe, with the Queen's Rangers, at Richmond—the whole force on the Island being one thousand eight hundred effective men.

On the 15th of January, early in the morning, the rebel detachment of near three thousand men, under the command of the person styled Lord Stirling, crossed the ice and entered Staten Island. Lord Stirling marched immediately towards the landing place, and by his position cut off General Stirling's communication with the Volunteers of Ireland and

the Queen's Rangers. Lieut.-Col. Simcoe occupied the high grounds near Richmond with small parties of cavalry, and the infantry were sedulously employed in what might strengthen that post. There were three pieces of cannon (a nine and two six-pounders), mounted on platforms, without embrasures, in the redoubts. These were pointed at the eminences, where it was expected the enemy would first appear, and where the stones were collected in heaps, so that a round shot, if it struck among them, might have the effect of grape. If batteries, or any cannon, should be opened against Richmond, it was obvious these guns must be dismounted; they were, therefore, not intended to be exposed to such accidents; but the redoubt on the right [now a burying ground on a hill] was meant, on the first appearance of assault, to be abandoned, and its area filled with abatis which were provided, and its gate left open and exposed to the fire of the cannon of the other redoubts placed at their respective gates, of the two regimental field pieces, and of the musketry from the doors, windows and loop-holes of the barracks. The officers' barracks, which were within the triangular area formed by those of the soldiers and the redoubts, were intended to be taken down, and the logs of which they were composed were to be heaped within a hut, and to form a traverse on a part exposed to the enemy. The rear of the works were secured by their position on the edge of the hill from any possibility of attack, and some of the huts, which ran below the surface of it, were in perfect safety from any shot whatsoever, and nearly so from shells, against the splinters of which their logs were very respectable traverses.

There was a gun boat, which was frozen up in the creek, at the foot of Richmond Hill. This gun was elevated so as to fire a single round of grape shot; some swivels also were brought into the redoubts. Spike nails, which there were a quantity for the barrack purposes, were driven through boards, ready to be concealed under the snow in places which were most accessible; all the cattle in the neighborhood were brought in the precincts of the garrison, as were the sledges, harness and horses, and the most cheerful and determined appearance of resolution ran through the whole corps. About midday many deserters came in from the rebel army; by them a perfect knowledge of the enemy's force was gained, and one of them affirmed that he overheard some of their principal officers say, "That it was not worth while to attack Richmond where they were sure of obstinate resistance, and which must fall of itself when-

ever the main body was taken."

Lieut. Col. Simcoe was anxious to communicate with Lord Rawdon, and to obtain any intelligence or orders his lordship might have for him. He sent his adjutant, Lieut. Ormond, with directions to get some of the militia to convey a letter for that purpose by the sea shore [South Beach]. Some scattering parties of the enemy had been that way, on which account Lieut. Ormond could get no one to venture; he therefore went himself, and putting on colored clothes that he might not be distinguished, in case of any small parties lying in ambuscade, he got safely to the flag staff, [now Fort Wadsworth] and returned without discovery. The rebels making no attempt in the day time upon the redoubts, where General Stirling was, led Lieut. Col. Simcoe to conclude that they waited for cannon or more forces, and meant to storm them at night or the next morning; for, though no person could hold more cheaply than he thought himself authorized to do, those men on whom the enemy had conferred the office and title of Generals, it appeared totally unreasonable that having so well chosen the moment of invading the Island, they had no determined point to carry, or had neglected the proper means to ensure its success. On these ideas, he desired Colonel Billopp, (who commanded the militia of Staten Island), to get them to assemble to garrison Richmond; but neither entreaties, the full explanation of the advantage such a conduct would be of, nor the personal example of Col. Billopp, had any effect; not a man could be prevailed upon to enter the garrison. They assembled to drink at various public houses, and to hear the news, or were busy in providing for the temporary security of their cattle and effects; and these were not disaffected persons, but men who were obnoxious to the rebel governors, many of them refugees from the Jerseys, some who had every reason to expect death, if the enemy succeeded, and all the total destruction of their property.

Lieut. Col. Simcoe was therefore obliged to lay aside his intentions, which were to march with his cavalry, carrying muskets, with as many infantry as he could justify the taking from Richmond, with his field pieces in sledges, together with the swivels fixed upon blocks, and to get near the enemy undiscovered, and to make as great an alarm and as much impression as possible upon their rear, whensoever they attempted to storm the British redoubts. All the roads between Richmond and the headquarters, [New Dorp], led through narrow passes and below the chain of hills; these, where they

had been beaten only, were passable, the ground being covered with several feet of snow, so that no patrols were made during the night, which would have been useless and dangerous; and the cavalry were assembled within the redoubts, the night was remarkably cold. A person from the Jerseys brought the report of the country, that Washington was expected the next day at Elizabethtown, and that straw, &c., was sent to Staten Island. He went back again, commissioned by Lieut. Col. Simcoe, to observe what stores were in Elizabethtown, and particularly to remark what air-holes were in the ice on the Sound between the mouth of Richmond Creek and Elizabethtown, as it was intended, if nothing material intervened before the next night, to send Captain Stevenson with a detachment to burn Elizabethtown, and to give an alarm in the Jerseys.

The intelligence which this zealous and trustworthy loyalist brought was very probable. The making a winter campaign in America had always appeared to Lieut. Col. Simcoe a matter of great facility, and by frequently ruminating upon it, he was alive to the advantages which would attend Mr. Washington in its prosecution. He would without hesitation have abandoned the post at Richmond, and joined Lord Rawdon, or General Stirling, taking on himself all consequences, had it not appeared to him that the possession of Richmond would insure to Mr. Washington a safe retreat, even should the ice become impassible, and would probably inculcate on him the propriety of his seriously attempting to keep Staten Island at this very critical period, when the Commander-in-Chief was absent with the greatest part of the army, and the troops in New York, under General Knyphausen, were probably not in a capacity to quit it and take the field; particularly as in that case the nominal militia, whose members were so well displayed, as sufficient to garrison it, must for the greater part have melted away in their attendance on the army, to whose various departments they in general belonged.

Mr. Washington might without difficulty have assembled from the smaller creeks, and even from the Delaware and Hudson's river, a multitude of boats, which, while the snow was upon the ground, might be conveyed overland to the Staten Island Sound; and with these, added to those which attended the army, he might transport his troops or form bridges, securing all approaches to them from the water by batteries constructed on the Jersey shore, while by other attacks and preparations he certainly could have thrown

great difficulties in the way of General Knyphausen and the British army in the three Islands.

Lieut. Col. Simcoe, reasoning on the possibility of these events, waited to be guided by circumstances. If General Stirling could hold out, and was neither overwhelmed by number, or reduced by famine, which was most to be dreaded, it was obvious Richmond would be safe. If matters happened otherwise he was perfectly certain, from Lord Rawdon's character, that he should receive some directions from him, who would never remain in an untenable pose, with the certainty of being made prisoner; and at all events Lieut. Col. Simcoe determined, in case General Stirling should be defeated, and that he should receive no orders, he would attempt to escape; for since the rebels had shown a total defect in every private and public principle of honor, when they violated the convention with General Burgoyne's army, he and the officers of the Queen's Rangers had determined in no situation to surrender, where by escaping, if it should be but a mile into the country, the corps could disband itself individually, and separately attempt to rejoin the British armies; proper inducements being held out to the soldiers, and great aid being reasonably to be expected from the loyal inhabitants, scattered throughout every colony, and in very great numbers.

This, which had been his common conversation and steady resolution, in case of any fortunate events, was now determined on by Lieut. Col. Simcoe; his ideas were to forerun all intelligence and to attempt to surprise Col. Lee, at Burlington, and then to escape to the back countries. For this purpose he had sledges which could carry a hundred men, and he had no doubt of soon increasing them in the Jerseys to a number sufficient to convey the whole corps. The attempt was less dangerous in itself and less injurious, if it failed, to the community than the certainty of being destroyed by heavy artillery, of ultimately surrendering, of mouldering in prison, and becoming lost to all future service to their king and country.

There was no corps between General Washington's army and that of Lincoln's hastening into Charlestown but Lee's. When once in possession of his horses there was but little doubt in the minds of Lieut. Col. Simcoe and the officers to whom he communicated his ideas, but that he should effect his retreat into the back parts of Pennsylvania, join his friends there, probably release the Convention army, and not impossibly join the Commander-in-Chief in Carolina.

Full of these ideas, it was with great surprise and pleasure that Lieutenant Col. Simcoe understood the enemy were retreating from the Island. He immediately pursued them with the flank companies of the Hussars, and was overtaken by an order from General Stirling to effect the same purpose; but the enemy had passed to the Jersey shore before he could come up with them. While the troops in the enemy's front, on their arrival at the heights opposite to the British redoubts, halted for the rear to close up, they were permitted to make fires, which increased the power of the frost, and rendered them totally unable to proceed, and the severity of the night affecting the whole of them, many lost their limbs and several their lives. There were vast mounds of snow drifted before the redoubts, which Lord Stirling gave as his reason for not attempting them; and General Knyphausen, on the first signal of Staten Island being attacked, embarked troops to support it. The enemy in the dark of the evening saw there vessels, (which, whether the passage could be effected or not, were wisely directed to be kept plying off and on); but they did not wait to see if they could reach the Island, which in fact the drifting ice prevented, but immediately determining to retreat, they effected it the next morning, losing many men by desertion, and many British soldiers, who had enlisted with them to free themselves from imprisonment, embraced the opportunity of being in a country they were acquainted with to return to their old companions.

The Queen's Rangers obtained a great many recruits, and it is very remarkable that neither that corps nor the Volunteers of Ireland had a single man who deserted from them, while there were such opportunities and apparent reasons to do it. Lieut. Col. Simcoe, on his return from Elizabethtown Point, where the enemy passed, had information that a party of plunderers had crossed from the Jerseys to the other end of the Island. He detached the Hussars in pursuit of them, but they fled, on the Staten Island militia collecting together. The frost still continuing there were many reports and a general expectation that the enemy would again adventure upon the Island, with superior force, with sufficient provisions to attempt some greater purpose, and patrols were constantly made on all the roads by which they could possibly approach, by order of General Stirling.

The Queen's Rangers had formerly experienced how ready General Stirling was to represent their services, and they now in common with the other troops, had a further proof of his good inclina-

tions, it being inserted in general orders of the 21st of January, "Brigadier Gen. Stirling is happy to inform the troops on this Island of his Excellency Gen. Knyphausen's fullest approbation of their behavior, and the good countenance they showed when the rebels were upon this Island, which the brigadier had reported to the Commander-in-chief; and his Excellency desires his thanks may be given to them."

On the 25th, Lieut. Col. Simcoe gave out the following order: "That he expects the order relative to officers and soldiers sleeping in their clothes be strictly complied with, such recruits excepted whom the officers commanding companies may judge as yet unequal to the duties of the regiment; if any half-bred soldier disobeys this order, the first officer or non-commissioned officer who meets with him, will deliver him to the officer on guard to be put on some internal duty. The Lieut. Col. has particular satisfaction in seeing the General's approbation of that good countenance which enabled him, on the late inroad of the enemy, to rest perfectly at ease without augmenting the duty of the regiment. He knows its universal spirit, and certain from the fidelity of those on guard, that the garrison cannot be snatched away by surprise, is confident that Richmond redoubts will be too dear for the whole rebel army to purchase.

* * * * *

Colonel Simcoe formulated a plan to capture "Mr. Washington," as he called him, by making a secret march to Morristown. While waiting for Sir Henry Clinton's conclusions, the Hussars were ordered to march to New York, with a convoy, over the ice. Lieut. Col. Simcoe goes on to say:

It would seem that the same negligence in Gen. Washington's quartering in front of his army had attracted the notice of Captain Beckwith, Gen. Knyphausen's aid-du-camp, and he had formed a plan to carry off that General, for which purpose cavalry were collected at New York, and among others Captain Beckwith obtained the Hussars of the Queen's Rangers, of whom he had a good opinion. Brig. Gen. Stirling communicated to Lieut. Col. Simcoe the purpose for which the cavalry was withdrawn, as it was intended that a general movement from Staten Island should favor the enterprise.

Since it did not take place on so large a scale as was at first designed, Lieut. Col. Simcoe received orders "to send a party to surprise the enemy's post at Wood-

bridge or Rahway, and to give a general alarm;" this party was to cross the ice at one o'clock in the morning, and not to return until nine or ten. Accordingly Lieut. Col. Simcoe passed the ice with two hundred infantry at one o'clock; Major Armstrong with some infantry, the cavalry and cannon occupying the heights, at the Old Blazing-Star [Rossville], to cover their return. The snow prevented all possibility of marching but in the beaten road; there were no posts in Woodbridge.

* * * * *

Colonel Simcoe then gives a detailed account of his adventures in New Jersey, where they had a warm engagement with the Continental militia. After that he continues:

The party returned to Richmond without further molestation. The Queen's Rangers lost only one man, already mentioned; a few were wounded, but they bore no proportion to the number whose cloths were struck by the enemy's bullets, fired at a distance, through intervening thickets, or more probably by those who had not recollection enough to rain down their charges. The enemy's loss was supposed to be more considerable, as many of them were seen to fall, and the whole of the affair being between single men, the Rangers were infinitely better marksmen than the Jersey militia. Captain Beckwith had found it impracticable to carry his attempt into execution, from an uncommon fall of rain which, encrusting the top of the snow, cut the fetlocks of his horses and rendered it absolutely impossible for him to succeed. The Hussars soon afterward returned to Staten Island. The ice floating on the 22d of February, the Sound became impassable. The soldiers were permitted to undress themselves at night, and in case of alarm they were directed to accoutre in their shirts, and to form at their posts.

Lieut. Col. Simcoe, on his arrival at Staten Island from imprisonment, had applied to the Commander-in-chief to request that he might join the army to the southward. He had also written in the strongest terms to Earl Cornwallis, soliciting his lordship to support his application. In case his wishes should not take place, he was anxious to be of what service he thought the present situation of the Queen's Rangers would admit; for this purpose he made application through the proper channel to General Knyphausen for discretionary permission to beat up the enemy's forts in the Jerseys, and to have boats sufficient to transport three

hundred infantry and sixty cavalry, to be manned by the Rangers, and to be left totally to his own disposal. He proposed by this means to countenance desertion, then so prevalent in Washington's army, and to keep the whole coast in continued alarm. He had the most minute maps of the country and the best guides, and the Loyalists, without doubt, would have universally joined him. The first enterprise he meant to attempt was to surprise Col. Lee at Burlington. * * *

Lee's corps were excellently mounted and disciplined; he himself was active and enterprising, and had that weight in the Jerseys which capacity and power, with a very free use of it, could give to the possessor. The importance it would have been of to the intended system of operations to have seized upon Col. Lee and demolished his corps is best illustrated by remarking that, although Burlington is nearly seventy miles from Staten Island, he was understood to have his pickets eight or ten miles in his front for his security.

Lieut. Col. Simcoe's proposals were approved of by Generals Knyphausen, Stirling and Tryon. Some of their boats were sent to him, and the remainder were in forwardness when, on the 23rd of March, 1780, the infantry of the corps received orders to embark for Charlestown, which it did on the 4th of April. Captain Wickham was left with the Hussars in the town of Richmond, and the duty of the redoubts was taken by a party of two subaltern officers and sixty rank and file, from the 82d regiment, under his directions; this detachment was in a few days relieved by the 22d regiment. The Hessian regiment of Ditforth, Queen's Rangers, Volunteers of Ireland, and Prince of Wales Volunteers, under command of Col. Westerhagen, sailed on the 7th. The Queen's Rangers anchored in Stono inlet on the 18th, and camped before Charlestown, (S. C.,) on the 21st. * * * Captain Wickham, of the Hussars, had by no means been idle while at Richmond. The post was such as might have been a temptation to an enterprising enemy; but General Knyphausen, by frequent and well-concerted expeditions, had kept the rebels fully employed in their own cantonments, the Jerseys. On one of these attempts, the Hussars of the Rangers were eminently distinguished, as was detailed to Lieut. Col. Simcoe by Captain Wickham, and by him read to the Commander-in-Chief, who was highly satisfied with it. The report mentions, "that on the 15th of April, the cavalry on Staten Island, consisting of Cornet Tucker and twenty of the 17th regiment, light dragoons, Capt. Wickham with a troop of forty-five men

and Capt. Diemar with his Hussars, forty men, crossed Cole's ferry, and marched to English neighborhood, where they joined Major DuBuy, with three hundred of the regiment DuBose, and fifty of Colonel Robinson's corps. At New Bridge Sergeant McLaughlin, with six of the Rangers in advance, fell in with and either killed or took the whole of a small rebel outpost. * * * "

On the 21st of June the regiment landed at Staten Island, and marched to Richmond redoubts. At midnight Lieut. Col. Simcoe received orders to proceed instantly to the Jerseys, where General Knyphausen, having thrown a bridge of boats over the Sound, near Elizabethtown Point, was encamped. The Hussars of the regiment here joined the corps.

[Then followed an event that has formed one of the very blackest pages in English military history—the battle of Springfield, the burning of the village, and the wanton murder of the wife of Pastor Caldwell. The Queen's Rangers took part in it, of course, and lost. They returned to Staten Island in the night. On the 19th of July Lieut. Col. Simcoe joined his regiment and immediately left Staten Island, going to Long Island. Lieut. Col. Simcoe received this message from Major André, then serving as Adjutant General: "The General assures you that the Rangers shall be pitted against a French regiment the first time he can procure a meeting."]

* * * The Queen's Rangers crossed from Long to Staten Island and marched to Richmond redoubts on the 8th of October. * * * The Commander-in-Chief thinking it proper, in the General orders, to publish the high idea which he entertained of Major André, both as a gentleman and an officer, and the sense he entertained of the loss his King and country had met with in his death, Lieut. Col. Simcoe, who had considered his execution as a barbarous and ungenerous act of power in the American General, and who had certain and satisfactory intelligence that the French party in general, and M. Fayette in particular, who sat upon his trial, urged Mr. Washington to the unnecessary deed, took the opportunity in his orders to the Queen's Rangers, the officers and soldiers of which personally knew and esteemed Major André, to inform them that, "he had given directions that the regiment should immediately be provided with black and white feathers as mourning, for the late

Major André, an officer whose superior integrity and uncommon ability did honor to his country and to human nature. The Queen's Rangers will never sully their glory in the field of any undue severity; they will, as they have ever done, consider those to be under their protection who shall be in their power, and will strike with reluctance at their unhappy fellow subjects who, by a system of the barest artifices, have been seduced from their allegiance, and disciplined to revolt. But it is the Lieut. Col.'s most ardent hope that on the close of some decisive victory, it will be the regiment's fortune to secure the murderers of Major André, for the vengeance due to an injured nation and an insulted army."

* * * * *

It was generally supposed about the latter end of October that the enemy meditated some attempt on Staten Island. M. de Fayette was in the neighborhood of Elizabethtown, in force and with boats on travelling carriages. Lieut-Col. Simcoe by public conversation, the means of spies, and by marching to Billopp's Point in the dusk of the evening, so as to be discovered from the opposite shore, and then returning by ways which the enemy could not see, had endeavored to attract their notice and possess them with a belief that an inroad into the Jerseys was in contemplation. As M. Fayette arrived in the vicinity the very day subsequent to this feint, it was reasonable to believe that his march was in consequence, and that the boats with him were destined to facilitate his passage across the small creeks with which the Jerseys are intersected, in case of the British troops making any incursions into that country. Every proper precaution was taken by the troops in Richmond to prevent a surprise. On the 12th of November official information was sent by the Adjutant General to Lieut. Col. Simcoe that his post was the object of Fayette's design, and that it probably would be attacked on that or the ensuing night. He immediately declared in orders: "The Lieut. Colonel has received information that M. Fayette, a Frenchman, at the head of some of his majesty's deluded subjects, has threatened to plant French colors on Richmond redoubts. The Lieut. Colonel believes this report to be a gasconade; but as the evident ruin of the enemy's affairs may prompt them to some separate attempt, the Queen's Rangers will lay in their clothes this night, and have their bayonets in perfect good order."

The Highlanders immediately assembled and marched to the redoubt, which, in the distribution of posts, was allotted

to them to defend, and displaying their national banner, with which they used to commemorate their saint's day, fixed it on the ramparts, saying, "No Frenchman or rebel should ever pull that down." The Rangers were prepared if an attack should be made on the Watering Place, which appeared to be most probable, to march out and attack any division which might be placed, as had been in Lord Stirling's attempt, to mass the troops in Richmond. Two field pieces, six pounders, and Captain Aulhouse's company of riflemen had reinforced them.

Lieut. Col. Simcoe made himself acquainted with the landing places and the intervening grounds, in the minutest particular, and he had the Commander-in-Chief's directions to abandon his post, "If the enemy should land in such force as to make, in his opinion, the remaining there attended with risk." The defects of Richmond were not sufficiently obvious for such inexperienced men as the rebel generals to seize upon and profit by at once. How far they might attract the instantaneous notice of the scientific French officers, supposed to be acting with them, it was not easy to foresee. Had the enemy been in a situation to have attacked the place by regular approaches, Lieut. Col. Simcoe would have done his best endeavors to have maintained it; but had any General, at the head of a very superior force on the moment of his appearance, placed twenty or thirty field pieces on two separate eminences which enfiladed the redoubts, and formed a column to penetrate under cover of the cross fire, he had resolved to abandon what he considered in case of such a disposition to be untenable.

A false alarm, which was given by an armed vessel stationed in Newark Bay, occasioned a considerable movement in the army, and troops from New York embarked to reinforce Staten Island; the post at Richmond was supposed to be the object of an attack. On the first gun being fired, patrols had been made on all sides by the cavalry, and the infantry slept undisturbed, Lieut. Col. Simcoe apprehending the alarm to be false. The Rangers were very alert on guard, and proud of their regimental character of not giving false alarms, or being surprised; and the sentinel, as Lieut. Col. Simcoe remarked in orders upon the only omission which ever came under his cognizance, "felt a manly pleasure in reflecting that the lives and honor of the regiment were entrusted to his care, and that under his protection his comrades slept in security."

* * * * *

On the 11th of December, 1780, the

Queen's Rangers embarked on an expedition to Virginia, under the command of General [Benedict] Arnold. They were very active in all the movements of the British army and formed a part of the troops commanded by Earl Cornwallis at Yorktown. When it was certain that the entire force under that distinguished general must surrender, Colonel Simcoe, according to his own writing, "sent Lieut. Spencer to his Lordship to request that as his corps consisted of Loyalists, the object of the enemy's civil persecution, and deserters, if the treaty was not finally concluded, that he would permit him to endeavor to escape with them in some of those boats which General Arnold had built; and that his intention was to cross the Chesapeake and land in Maryland, where, from his knowledge of the inhabitants of the country and other favorable circumstances, he made no doubt of being able to save the greatest part of the corps and carry them into New York. His Lordship was pleased to express himself favorably in regard to the scheme; but said he could not permit it to be undertaken, for that the whole of the army must share one fate. The capitulation was signed on the 19th of October. Earl Cornwallis, on account of Lieut. Col. Simcoe's dangerous state of health, permitted him to sail for New York on the "Bonetta," which by an article in the capitulation, was to be left at his disposal, a sea voyage being the only chance, in the opinion of the physicians, by which he could save his life. On board of this vessel sailed as many of the Rangers, and of other corps, deserters from the enemy, as she could possibly hold. They were to be exchanged as prisoners of war, and the remainder of Earl Cornwallis' army were marched prisoners into the country. Lieut. Col. Simcoe, on his arrival at New York, was permitted by Sir Henry Clinton to return to England.

* * * * *

Many of the soldiers, who were prisoners in the country, "were siezed," says Col. Simcoe, "as deserters from Mr. Washington's army. Several enlisted in it to facilitate their escape, and being caught in the attempt, were executed. A greater number got safe to New York, and, had the war continued, there was little doubt but the corps would have been re-assembled in detail. The Rangers were so daring and active in their attempt to escape that, latterly, they were confined in a 'goal.' Captain Whitlock, who commanded them while prisoners in the country, was one of the captains who drew lots with Captain Asgil to suffer for Huddy's death."

Captain Saunders was the last com-

mandant of the Queen's Rangers in this country. They were, afterwards, both cavalry and infantry, enrolled in the British army; but the corps was disbanded at the ensuing of peace, and many of the officers, and most of the soldiers, settled on the lands to which they had a claim in Nova Scotia.

The following is an extract from "the general return of officers and privates surrendered prisoners of war, the 19th of October, 1781, to the allied army, under command of General Washington, taken from the original muster rolls:"

"Queen's Rangers—1 Lieut. Colonel, 1 Major, 10 Captains, 15 Lieutenants, 11 cornets, 3 quartermasters, 2 surgeons, 24 sergeants, 5 trumpeters, 248 rank and file—total, 320."

It may be useless now to recall the character and acts of Colonel Simcoe while serving his king on Staten Island. Let the century that has intervened soften our feelings toward a vanquished foe. When the war was ended he was a prisoner and went directly to England where he became a member of Parliament while holding a commission as Lieutenant Colonel in the regular army. When Canada was divided into two provinces, Simcoe was appointed Governor of Upper Canada. His headquarters were at York, now called Toronto. It seems that then his chief ambition was to increase the prejudice of the Canadians and Indians against the people of the United States, and the unpleasant, and frequently bitter, feeling existing in that province to-day, can be traced to the bigotry and vindictiveness of John Graves Simcoe. In 1796 he was appointed Governor of Saint Domingo, and in 1798 he was commissioned a Lieutenant General in the British army. He was sent to join Lord St. Vincent in the expedition to Portugal, and died a few moments after he landed.

Mr. Davis presented the following memorandum:

STATEN ISLAND PHOTOGRAPHS

Mr. Bradish J. Carroll has presented to the Association five negatives of photographs taken on the Island about 1884 and 1885. They represent Britton's Mill, which was destroyed by fire some years

ago; a view of the vicinity of the mill; a deformed beech tree that stood in the Clove Valley; the dock and adjacent shore at Sailor's Snug Harbor, before the Rapid Transit trestle was built, and a view of the New Jersey shore at Bergen Point, taken from the Staten Island side. Every one will agree that if a series of accurate pictures representing our Island as it was in by-gone years, say in the days of the Revolution, could be had, their present interest would be very great. That the future may be better provided for in this respect than the present, it would seem advisable for the Association to preserve such photographs of local objects and scenery as its members and friends can procure. It would be better still if one of the several members skilled in photography would take a series of pictures of the remaining Dutch stone houses, the homestead burying grounds, stretches of our beach and meadow scenery, in fact anything that is at present beautiful or interesting. Such a series carefully dated, and with other necessary memoranda, would be of permanent value.

MISCELLANEOUS MATERIAL, EXHIBITED.

Mr. Davis presented the cast-off skins of three black snakes, measuring respectively 5 ft. 8 in., 5 ft. 4½ in., and 5 ft. ½ in. in length. They were found by Mr. H. W. Putnam, May 31st, near the foot of Red Lane, Southfield, and were intertwined when discovered, which may have resulted from the snakes all going to the same place, though at different times, to shed their skins.

Mr. Davis also showed a specimen of *Hieracium sylvaticum*, Smith, found at Arrochar, where it grows in considerable abundance—an introduced species, new to the local flora, and not heretofore reported from America.

Mr. Arthur Hollick presented portions of a bowlder of Oriskany sandstone, almost entirely made up of masses of *Spirifer arrecta*, recently found at Prince's Bay.

Mr. Hillyer exhibited a number of fleshy and woody fungi, the result of a recent collecting trip in the vicinity.

On motion the Association adjourned until the second Saturday in September.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. V. No. 9.

SEPT. 12th, 1896.

Meeting held at the residence of Mr. William T. Davis, New Brighton.

In the absence of the President Mr Thomas Craig was elected chairman *pro tem*.

Messrs. William D. Twiggs, Giffords, and John M. Carrère, New Brighton, were elected active members.

Mr. Davis called attention to the death of Mr. Kirk B. Newell, at Alford, Mass, June 28th, who was for the past eight years an active member of the Association.

Mr. Arthur Hollick exhibited specimens of minerals and rocks and gave an account of

A RECENT EXAMINATION OF THE SERPENTINE AREA OF STATEN ISLAND.

During the past summer a careful examination of every rock outcrop on the serpentine area of the Island was undertaken, in company with Messrs. J. D. Irving and D. H. Newland of Columbia University, beginning at St. George and ending at Richmond. The object was to ascertain, if possible, whether any new facts could be elicited which would assist in solving the problem of the age and origin of the serpentine rocks. Of the various theories which have been advanced all but two have been practically abandoned. One of these considers that the serpentine is an altered igneous rock, the other that it represents altered sedimentary rocks. It is not necessary here to discuss the merits of each theory, because this would necessitate references to serpentines in numerous localities and this paper has to do only with Staten Island and the conditions which exist here.

Previous investigations, by Dr. N. L. Britton, may be found recorded in Ann. N. Y. Acad. Sci. II. (1881) 161; Trans. N. Y. Acad. Sci. I. (1881) 56; *ibid* VI. (1886) 12; Proc. Nat. Sci. Assn. S. I. I. (Oct. 9, 1886) 40. By Mr. L. P. Gratacap in our Proceedings, I. (May 14, 1887) 55 and by the writer, in same, IV. (Dec. 9, 1893) 6. Every investigation has brought to light some new fact in either stratigraphy or mineralogy, and it is evident that we have yet much to learn in both directions.

Our principal efforts during the past summer were directed towards obtaining observations of dip and strike and evidences or indications of stratification. Specimens were also collected from nearly every outcrop, which will be subjected to microscopic examination in thin sections, and incidentally the minerals found were noted.

Without going into the details, or placing any hasty conclusions upon record, in advance of a complete report, the following facts may be stated: First the rocks have a well defined line of strike, which follows the general trend of the hills, that is to say it is N. 25-55 deg. E. at New Brighton and gradually swings around until it becomes almost E. and W. at Richmond. The outcrops appear more or less distinct at a distance and their general dip and line of strike can be followed broadly by the eye, but when any particular portion is subjected to the test of the compass and clinometer the observations are often unsatisfactory. Nevertheless, a sufficient number were obtained to determine that, disregarding minor folds, there is a dip of from 20-60 deg. from the summit of the

ridge towards the north and west and an abrupt dip towards the east and south, which is at times almost perpendicular. It would appear therefore that in our serpentine area we have an anticline of stratified rocks—almost an overthrust fold, in fact—its axis extending in a general northeast to southwest direction. The rocks are so fractured and traversed by joints and shear planes that only in a very few localities can well defined stratification be seen. One of the best places is on the south side of Richmond Hill, where the edges of the strata may be seen crossing the road between the Latourette house and the school house.

Bearing in mind the outcrop of tremolite which was covered by the filling in for the Rapid Transit Railroad at St. George, we watched with some interest the excavations for the trolley piers lately made there and were rewarded by seeing a large mass of tremolite thrown out, from which beautiful specimens were obtained, showing besides, unmistakable evidences of bedding planes. This was all the more satisfactory as no indication of stratification had been observed in the original exposure.

The only other find worthy of special mention is a band of chlorite schist, which crosses the gulley north of Richmond road, at the head of Red Lane. It is well defined, being accompanied by white talc and red limonite, the series of green, white and red bands being quite conspicuous. This is I believe the first record of chlorite schist in place, on the Island, although Dr. Britton mentions the occurrence of "a very soft schistose rock, apparently now chloritic," close to the same locality (Proc. Nat. Sci. Assn. S. I. I. p. 41), which may prove to be continuous with it.

Mr. William T. Davis exhibited specimens of butterflies and read the following

NOTES ON STATEN ISLAND BUTTERFLIES

A local list of the butterflies found on the Island was published in the "Journal of the New York Entomological Society"

in March, 1893. Since that date three additional species have been added, bringing the number up to seventy-two. The fact that the butterfly collector goes afield, ever looking for a surprise by reason of the unexpected visitation, often in great numbers, of particular species, was pointed out in the list of 1893, and the abundance of *Terias nicippe* in 1880 and *Pyrausis cardui* in 1884, was commented upon. Nothing could better illustrate the truth of this statement than the sudden appearance this year of the Dog's-head butterfly.

Colia caesmia, the Dog's-head butterfly, has heretofore been unknown to collectors in the vicinity of New York and its name does not appear in any of the local lists. In June Capt. Wainwright captured a single specimen on the Island at Eltingville. On July 11th, in a partly overgrown field at Kreischerville, near the Ultramarine works, or "Blue-factory," as it is locally called, I saw a number of *caesmia* butterflies. A few hovered about the butterfly weeds (*Asclepius tuberosa*), but most of them were carried across the open ground by the strong breeze then blowing. There was less breeze next day when the same field was visited and the butterflies seemed slightly more inclined to light on the *Asclepius*. My plan consisted in sitting under a perimmon tree in the middle of the partly overgrown sandy field and when a butterfly came into the clearing to catch it if I could. In that way two specimens were captured in about an equal number of hours and a few others, which were mostly in a great hurry, were seen. The field was again visited on July 25th, but the butterflies had ceased flying. This species has also been taken this year for the first time in Canada, about Toronto and in southern Manitoba, as noted in the "Canadian Entomologist" for July and August, 1895.

Thecla titus, the second addition to the local list, as found to be quite plentiful at Bogarlus' Corners and at the Ultramarine works, on July 11th, 12th and 25th. They were only observed on the flowers of the butterfly-weed.

Chrysophanus thoe, the third addition to the local list, was collected on the 20th of last June, in Clove Valley by Mr A. C. Weeks, who has kindly given me the specimen. The butterfly is reported from several places about New York.

Euptoieta claudia. In all six specimens of this butterfly have been taken or seen on the Island, usually in September and October. On July 11th, 1895, one was observed on Canada Hill, near the Richmond Valley railroad station.

Papilio cresphontes. In September, 1893, Mr Kadletz had one of these butterflies pinned on the wall in his green house at Garretsons. He stated that others had been seen about the golden rods in a nearby field. Mr. and Mrs. Frederick F. Hunt report a butterfly of this species, flying about one of their flower beds on Westervelt avenue, New Brighton, in August last. Capt. Wainwright also reports three specimens at Eltingville. In August and September, 1882, several of these butterflies were taken at New Brighton.

Pieris protodice. Collected last June at Eltingville, by Capt Wainwright. Specimens were taken in September, 1882, August, 1883 and August, 1886.

Terias niope. On May 10th, 1896, a male specimen was taken on Todt Hill. Two males were collected on the Island in the fall of 1891.

Pygus tesellata, was seen on September 8th, 1895, flying along the Morgan road on Karle's Neck. A specimen was captured at the Billopp House, Tottenville, September 29th, 1883.

Mr. Holick read the following review of

RECENT LITERATURE RELATING TO STATEN ISLAND

I 16th Ann. Rept U. S. Geol. Surv. Part IV, 1894-95. Mineral resources of the United States, 1894. Nonmetalliferous Products.

Under "Stone" the term "granite" is made to include all rock quarried under that name, hence the Graniteville trap rock or diorite is included. The produc-

tive counties of New York are mentioned on p. 460 as Essex, Richmond, Orange and Westchester.

Magnesite is mentioned on p. 514 as occurring, among other localities, on "Serpentine Hills, Staten Island."

On p. 556, under "Clay," is an analysis of one of the Kreischerville fire clays, viz:

Silica 64.28, Alumina 24.76, Ferric oxide .83, Lime .73, Magnesia "trace," Alkalies 2.35.

And on p. 560 a kaolin, viz:

Silica 82.51, Alumina 11.57, Ferric oxide .63, Lime .29, Magnesia .78, Alkalies 2.66

II. "Bennettites (Williamsonia). Flores." Under the above caption, Mr. A. C. Seward, in *Catalogue of the Mesozoic Plants in the Department of Geology, British Museum, &c Part II. Gymnospermae*, refers, on pp. 155, 156, to *Williamsonia*? *Riesii*, from the Kreischerville clays, and says "it is probably a true *Williamsonia*." This is very gratifying, inasmuch as the specimen was referred somewhat dubitantly to that genus by me at the time when it was described and figured (see Trans N Y Acad. Sci. XII. (1892-93) 37, Pl 1 figs. 2, 3.)

MINOR MEMORANDA, ETC.

Capt Robert D. Wainwright read the following note:

BANK SWALLOWS ON STATEN ISLAND.

On May 5th I saw several Bank Swallows, and after some search found they had excavated holes in the bank at the front of the Woods of Arlen house. There were two or three holes and several partially excavated. On June 8th I dug out one of the holes and found the nest, consisting of grass stems, on which lay four eggs, which on being blown proved to be well advanced in incubation. This is I believe the first time these birds have been reported as nesting on Staten Island, and adds another species to the lists previously published.

Mr. Ira K. Morris presented the lock and one of the hinges of the old red jail at Richmond, recently destroyed by fire.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. V. No. 10.

OCT. 10th, 1896.

Meeting held at the residence of Mr. Thomas Craig, New Brighton.

In the absence of the President Mr. A. K. Johnston was elected chairman *pro tem*.

Messrs. W. A. Johnston, Princes Bay, L. A. Camacho, New Brighton, and E. F. DuBois, West New Brighton, were elected active members.

The committee on moving reported that the library and collections of the Association had been successfully removed from the former quarters in the New Brighton Village Hall to the room assigned to the Association in the Staten Island Academy building.

The Secretary called attention to the long period of time—almost fifteen years—during which the Association had occupied its old quarters, rent free, through the liberality of successive boards of trustees of the Village, and suggested that some recognition of their liberality be made.

On motion the Secretary was instructed to transmit to the present Board of Trustees a grateful acknowledgement of the manner in which they and their predecessors had always treated the Association, by reason of which the existence of the Association in its early days and much of its subsequent success was largely due.

The Secretary also stated that an index to volume V. of the Proceedings was in course of preparation, the volume to terminate with the current number.

Mr. William T. Davis exhibited specimens of orthopterous insects and read the following :

NOTES ON CRICKETS AND OTHER STATEN ISLAND ORTHOPTERA.

In some of the low moist sandy fields

between Old Place and Mariners' Harbor, the Broad-winged Tree-cricket, *Æcanthus latipennis* Riley, has been observed for several years. The species is an addition to the local list of orthoptera and may be easily separated from its congeners by the antennæ, which are distinctly pink at the base, and also by the absence of the elevated dark colored dots which usually occur on the first and second joints in the native members of the genus. The song resembles that of *Æ. nigricornis* Walker, (*Æ. fasciatus* Fitch), but has a more mellow tone, as if produced by some wooden, flute-like instrument.

Æcanthus 4-punctatus Beut. Several specimens of this species, which may prove to be a variety of *Æ. nigricornis*, have been found on the Island.

Nemobius carolinus Scudder, was mentioned as distinct from *N. vittatus* (*N. fasciatus*) in the list of orthoptera found on Staten Island, printed in "Entomologica Americana" in April, 1889, but at that time no definite name could be given. Since 1889 two names have been bestowed upon the insect by entomologists, and it has finally been identified by Mr. Scudder as *N. carolinus*, described by him in 1877. What Dr. Fitch calls the "fiddle-bow nerve," in the tegmina, is differently shaped from the same nerve in *fasciatus*, the ovipositor is shorter (4 to 5 mm. long), and the stridulation a continuous rolling whirr, instead of the metallic *clink clink*, of that species.

Phyllocirtus pulchellus Uhler, has been found in some numbers at Old Place and Watchogue. It commonly occurs on bushes and young trees, and is often discovered on the sweet gum. If there is a dead curled leaf on the branch, a male

insect will crawl within the chamber thus formed and sing. This is particularly the case on chilly days in the Fall.

Chloealtis conspersa Harris. Several years ago, on the 15th day of September, a female grasshopper of this species was discovered on the third rail from the bottom of an old fence, with her abdomen two-thirds of the way into the rail itself. Unfortunately she was disturbed too soon, for when the rail was cut open no eggs were found, the intended laying of which, could be the only explanation of her position. On one of the lower rails that lay partly on the ground, four males of this species had congregated, and near them were more holes recently bored in the old wood. All of them were made along the large cracks in the rail, such as always come after exposure to the weather for a number of years.

Conocephalus exilis Davis, common along many of the salt water creeks, both on the Island and in New Jersey, was discovered several years ago in the Clove Valley, and has been since observed there every summer. Heretofore all that have been found were in the vicinity of the salt water, and this little colony in a clump of cat-tail rushes in Clove Valley, is therefore interesting. The Mock Bishop-weed (*Discopleura major*) grows in considerable abundance in the valley, and *Smilacina stellata* is reported from there in the local flora. Both of these plants have only been found along the salt meadows, elsewhere on the Island. Their association with the *Conocephalus* is mentioned as a coincidence, for these facts alone should not separate Clove Lake Swamp from the other fresh water morasses on the Island—they are simply interesting.

Ceuthophilus uhleri Scudder, was found at Tottenville on the 23rd of September, 1888. Two other species of *Ceuthophilus* have been collected on the Island, but their identification is uncertain.

The cockroaches, *Ectobia borealis* Saussure, and *Temnopteryx virginica* Brunner, have been found, and with *Arphia xanthoptera*, *Stenobothrus æqualis* and

Scudderia angustifolia, some of which were considered varieties of other species when the local list was published, bring the number of orthoptera known to inhabit the Island up to seventy-four.

Mr. Arthur Hollick read the following note on

A GRAY SQUIRREL IN CAPTIVITY.

On April 18th, 1886; while in company with Mr. William T. Davis, a nest of four young gray squirrels was found, in the vicinity of Richmond. They were well advanced in size and no difficulty was experienced in bringing them up. All but one died during the following two or three years. This one was a male and it lived until June 14th of the present year—a period of more than ten years. It had become exceedingly tame and was allowed to run free in the garden when anyone was there, always returning to its cage when nuts were rattled. About a year and a half ago it developed a propensity for gnawing its tail at intervals, until finally only a short stump remained. Data regarding the normal length of life of gray squirrels were not obtained.

MISCELLANEOUS MEMORANDA AND SPECIMENS.

Mr. Hollick called attention to the first volume, just issued, of "*An Illustrated Flora of the Northern United States, Canada and the British Possessions, &c.*," by Dr. N. L. Britton, in which every species of plant is not only described but figured; and as Staten Island is within the range, all its native and naturalized flora—about 1,300 species—are included in the work.

Mr. W. D. Twigg presented two arrow heads, found near Giffords, and a celt found about a hundred feet out from high water mark on the shore at Woods o Arden.

Mr. Davis exhibited a fresh water polyzoön, (*Plumatella* sp ?) found encrusting some brush-wood in the upper Snug Harbor pond.

Mr. Craig exhibited under the microscope, flies infected with parasites.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF
STATEN ISLAND.

VOLUME VI.

November 14th, 1896, to October 8th, 1898.

EDITED BY ARTHUR HOLLICK, SECRETARY.

The price of this volume is \$2.00. Single numbers 10 cents each.

Vols. i., ii., iii., iv. and v. may be obtained at \$2.50 each.

Some of the numbers of vols. i. and ii. cannot now be furnished separately.

NEW BRIGHTON, N. Y.,
1898.

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PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

Vol. VI. No. I.

Nov. 14th, 1896.

Sixteenth annual meeting, held at the Staten Island Academy, New Brighton.

The President in the chair. Twenty-five members and three visitors present.

Reports of officers for the past year were read and approved, viz:

Secretary:

No. of active members on roll at date of last report.....	77
Since elected.....	20
Resigned.....	5
Deceased.....	1
Dropped from the roll.....	6
No. of active members at date.....	85

Treasurer:

Balance from last year.....	\$213.94
Receipts:	
Dues.....	249.00
One life membership (W. B. Kunhardt).....	50.00
Sales of proceedings.....	52.59
	\$565.53
Disbursements:	
Printing proceedings.....	209.70
Postage and stationery.....	51.01
Janitor of village hall.....	15.00
Expenses of moving (contract)....	11.00
Subscriptions to periodicals... ..	9.25
	\$295.96
Balance in hand.....	\$269.57

Curator:

Additions to collections:	
Geology.....	8
Mineralogy.....	12
Botany.....	7
Antiquities.....	5
Miscellaneous.....	10
Additions to library:	
Titles in exchange list.....	38
No. of publications received.....	291
Titles donated.....	19
No. of donations received.....	25

Three of these are new exchanges, effected during the year.

Geographically the exchanges may be divided into:

United States.....	26
Canada.....	5
Great Britain.....	3
Germany.....	2
Central America.....	1
South America.....	1

In addition to the above the current numbers of Science and American Naturalist to date have been added by subscription.

The election of officers for the ensuing year resulted in the re-election of the former incumbents, viz:

President, Walter C. Kerr; secretary, Arthur Hollick; treasurer, Thomas Craig; curator, H. Cleaver Brown; trustee, Wm. T. Davis

The following matters of business were adopted, viz.:

That the regular meetings of the Association during the ensuing year be held on the second Saturday evening of each month except July and August.

That the Executive Committee be authorized to equip at its discretion, for museum purposes, the room assigned to the Association in the Staten Island Academy

That the Executive Committee be authorized to confer with the trustees of the Staten Island Academy and offer to deposit with the Academy the library of the Association, under such conditions as may be mutually agreed upon.

The following preamble and resolutions, offered by Mr. A. K. Johnston, were adopted:

WHEREAS, The Staten Island Chamber of Commerce has made it a special order

of business for its November meeting to consider a resolution looking to the establishing of a commission on a park system, water shed, avenues, drainage and tax maps, and as such action is directly in accord with the action taken by this Association, with reference to a park system, on June 8th, 1895, therefore be it

Resolved, That this Association express its approval of the resolution substantially as printed in the notice of the meeting, dated Nov. 12th, 1896, of the Chamber of Commerce, and that it tender its co-operation in the furtherance of the desired end.

Resolved, That a copy of this preamble and resolutions be forwarded to the Chamber of Commerce.

Mr. Arthur Hollick presented specimens of Cretaceous fossil leaves, with drawings of the same, from Tottenville, and read a paper on

RECENT ADDITIONS TO THE CRETACEOUS FOSSIL FLORA OF STATEN ISLAND.

Since Nov. 4th, 1883, when the first specimens of cretaceous fossil leaves were found at Tottenville, constant additions, a few at a time, have been made. Most of these have been shown at our meetings, and noted in our Proceedings, and the specimens placed in our museum. The number of species thus far identified from the Island is 50, of which 6 were new to science when found here.

To-night I have several additional specimens to show, found at the original locality on the shore at the base of the Tottenville bluff.

Some were found last summer by Dr. N. L. Britton, others on Oct. 11th by Mr. Eric T. King, and the remainder personally on Nov. 6th. Recent high tides have washed out the plant-bearing concretions and masses from the bluff and these lie scattered along the beach in considerable profusion; probably in greater abundance than at any time since the first discovery was made.

Most of the remains are only fragments but at least 12 specimens are sufficiently well preserved for identification, either

generically or specifically. Of these, one species, (*Laurus plutonia* Heer) although previously found, is represented by such excellent specimens that I have included it amongst those which have been drawn. *Populus Harkeriana* Lesq., we are enabled to report, not only as an addition to our local list of fossil plants, but as an addition to the Cretaceous flora of eastern North America, having been known previously only from the Dakota group of the West. *Tricalycites papyraceus* Newb. is represented by two specimens. A large palmate leaf, too fragmentary for exact determination, is either an *Aralia* or a *Sterculia*. *Devalquea Groenlandica* Heer (?), *Pterospermites* sp?, and several which may prove to be new species, complete the list.

Mr. Thos. Craig exhibited under the microscope and read memoranda on

SPECIMENS OF POND LIFE.

Clathrulina elegans Cienkowski.

In our Proceedings for Nov., 1884, Mr. E. A. Congdon published a list of the rhizopods he had found on the Island. In the list was included the one on exhibition under the microscope to-night. It is *Clathrulina elegans* and is mentioned as rare. I found it about five years ago in considerable quantities in Silver Lake in the stagnant north-west corner. Mr. Congdon gives this as the place where he found it.

Since then I have not seen it although I have frequently tried to find it. The present specimens were found in the upper pond at the quarries at Graniteville and were very numerous.

The animal is remarkable for the beautiful lattice-work silicious globe, which it makes. The globe has been compared to the well known Chinese balls with perforations.

In the present case the animal is attached to the roots of *Lemna* and of *Ludwigia*.

Dr. Leidy says, in his monograph of the rhizopoda, that he rarely had been so fortunate as to find the animal in an active condition. We have it here in a₁

stages of activity, from the youngest to the matured animal. It is active, with all its rays spread, catching minute infusoria. It is in the resting stage with all its rays withdrawn and frequently divided into two or four parts. I have watched it divide while still active, by allowing part of its body—apparently about $\frac{1}{4}$ to $\frac{1}{3}$ —to separate and emerge through one of the openings in the lattice ball. The part that escapes resembles a small amoeba without any lobes or pseudopodia. After resting a short time it suddenly breaks out into rays, those nearest the parent attaching themselves to it and lengthening into a long stem, similar to that which attaches the parent to its support. You may sometimes see two or three generations thus attached.

Dr. Leidy does not seem to have observed this mode of increase. He says that the individuals attached to others always appear successively younger, apparently as if they had originated by birth from those to which they adhere. He had observed the fact but did not see the process.

Dr. Cienkowski, the original discoverer of the animal in Russia, apparently did not see the process above described. He says that the animal subdivides and then withdraws its rays, and, subsequently, both spheres creep through the lattice and form two new animals. I did not observe this.

Plumatella arethusa Hyatt.

At the last meeting of the Association Mr. Davis reported and exhibited a polyzoon which he found in the Snug Harbor pond. It was in large dense masses attached to weeds and other objects in the water.

We have now to report another locality for the same animal. It was found by Mr. Fred F. Hunt in a pond near Richmond, close to the west side of the road leading from Oakwood station.

The members can examine both finds in the bottles on the table.

From an examination of the living animals from the two places, Mr. Davis and myself think they belong to the

same species. It is true there is a great difference in the size of the coenecium and the developement of the specimens. The individuals of Mr. Hunt's find are much larger and more vigorous than the other, but probably the character of the water, the quantity of food, etc., may have something to do with the difference in size.

The principal distinguishing characters in these animals is the lophophore or epistome—the beautiful circle of ciliated tentacles which bring food to the mouth. The shape of that distinguishes the genus. As well as we could make it out the lophophore was the same in both specimens. The animal is known as *Plumatella arethusa* Hyatt.

Mr. Walter C. Kerr exhibited leaves and sterile aments of *Ostrya Virginiana* (Mill.) Willd. and read the following note:

A TREE NEW TO OUR FLORA.

On Tuesday, November 3d, in company with Mr. Wm. T. Davis, I passed along an old road leading through the Bull's Head woods and coming out into the property of John J. Corson, at New Springville. Alongside the road, as it leaves the woods, a rough dam has been thrown up to form an ice pond and just at the face of the dam I saw a tree about eight inches in diameter which attracted my attention. Its general appearance and especially the bark, caused me to call it hop-hornbeam or ironwood. The leaves had fallen, the pistillate hop-like aments were not present, while the staminate aments resembled those of birch or alder. The bark, while characteristic, was not so shreddy nor was it as rusty as I have seen before. Nearby, on the earth dam, were several similar trees, one of which retained many dry leaves, specimens of which are exhibited, with branches containing sterile aments. These trees were found in unusually wet ground for this species, although another was subsequently noticed by Mr. Davis, about half a mile distant, on much dryer soil. In Minnesota I have seen the ironwoods hold their dried leaves all winter and I was

therefore surprised to see these specimens so bare. Now that the ironwood is known to be on our Island it may be confidently looked for in other localities as it is usually in abundance wherever found.

The only reference in our Proceedings to hop-hornbeam is on page 11, vol. iv. where I casually mentioned it in describing the surroundings of a certain red maple. This reference to my own article naturally caused me to revisit the locality, which I have done to-day, finding, as was expected, that the tree referred to is a hornbeam or blue beech. I cannot account for my originally referring to it as a hop-hornbeam except that it was a matter of secondary importance in the article and was more probably carelessly mentioned than erroneously observed.

Mr. Wm. T. Davis exhibited two butterflies new to the Island and read the following

ADDITIONS TO THE LOCAL LIST OF BUTTERFLIES.

Pamphila ocola. Captain Wainwright captured this rare butterfly at Annadale in September last and handed it to me for identification. The insect has also been compared with specimens in the American Museum of Natural History.

Nisonides icelus. Taken in May and also reported from the Island by Mr. Beutenmuller. It is much less common here than *N. brizo*.

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. The following references to notices and reviews of "Staten Island Names, Ye Olde Names and Nick Names," published by the Association, March 14th, 1896, have been contributed by various members.

New York Times, May 18th, 1896.

New York Herald, May 24th, 1896.

New York World, May 25th, 1896.

New York Sun, June 21st, 1896.

The New England Historical and Genealogical Register, Vol. L. July 1896, p. 380.

The New York Genealogical and Biographical Record, Vol. XXVII. No. 3,

July 1896, p. 169.

The American Historical Register, Vol. IV. No. 4, June 1896, p. 394.

Bulletin of the American Geographical Society, Vol. XXVIII. No. 2, 1896, pp. 196-97.

The pamphlet was also noticed in the following local papers:

Staten Islander, May 13th, 1896.

Richmond County Standard, May 16th, 1896.

Richmond County Democrat, May 23d, 1896.

Staten Island Gazette, May 27th, 1896.

Independent, May 30th, 1896.

II. In the New York Sun, Nov. 12th, 1896, is a serio-comic editorial headed "Aquahonga," which gives a somewhat fanciful comparison between the Staten Island of the past and present.

MISCELLANEOUS MATERIAL EXHIBITED.

Mr. L. W. Freeman presented fragments of a Helderberg limestone boulder, containing well preserved specimens of *Spirifera macroleura* and *Strophomena rhomboidalis*, found on Fox Hills. Also two stone pestles, one from near Arlington station and the other from Old Place.

Mr. F. E. Baldwin presented a section of a tree trunk in which the central part, with a diameter of about three inches, was completely separated and free from the surrounding outer part. The zone of separation was occupied by the mycelium of some fungus.

Mr. Wm. D. Twiggs exhibited heads of cotton grass (*Eriophorum Virginicum*, L.) from a peat bog near Giffords.

The President then delivered his annual address as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

A year passes so quickly as to seem to embrace but little that is new, and it always appears as though the contents of an annual address could have been quite as well presented last year, and better next.

Perhaps enough has been said of the prosperity of this modest organization. The constant increase in membership and attendance, the acquisition of material, the increased rate of publication, the sur-

plus funds in hand, all have but one significance—too obvious for special comment.

Our rapid growth in membership has added many valuable names to our roll. As is usual in such associations, about a dozen members contribute substantially all of the matter for publication, while the attendance is comprised within twice that number. Within the dozen or two members taking active personal interest in the affairs of the Association it is probable that we have all of the scientific men on our island though if there be even one more we are seeking him very hard. Of the other class, those who approve such work and practically show their approval by becoming members, paying the small dues, and finding some compensation in the printed proceedings, there is no limit to the number which our membership may contain, and it is desired that as many be enrolled on our list as take sufficient interest to permit their names to thus appear, even though they never attend a meeting, or contribute in any other way to the advancement of our local scientific interests. The fact that many such are members is of itself an element of strength to the Association in the community, and it is hoped that none will be reticent with respect to assuming membership, though having no intention of active participation in the affairs for which we are organized.

On the other hand it may be said that two few contribute directly to the published proceedings and the discussions thereon. When this subject is mentioned between individuals, dearth of material is naturally urged. Without drawing invidious comparisons it will be noticed that with some of our members there is no dearth of material; others enjoy a moderate supply; with some the dearth is complete.

The abundance of material found by various members is almost proportional to the amount of opportunity which they permit themselves to enjoy. I feel very strongly on this point and can speak from personal experience. Such new material

as I have found in my rambles has not been detected through profound knowledge, but rather through the habit of treating as new everything with which I am not personally acquainted. A certain amount of pleasure follows this contact with presumed newness, even though one find after another resolves into commonplace abundance. Nevertheless the observer has found something new because it is new to him, and the more he observes the more likely he is to find something new to others. It is related as not uncommon that students coming fresh into a given field will find new things which their professors have passed by year after year. It is not exhaustive knowledge which is required to unearth material but it is opportunity for going afield, observing, doubting, and above all cultivating the disposition to consider everything new which is not well known or understood.

The common scientific adage—treat everything as rare until it is known to be abundant—is always worth repeating. Our most careful collectors often fail to observe this, as in the case where two of the best collectors of this association found on the beach a large number of small and, to them, new sponges. They were so abundant that only three or four were taken. None have since been found, and the few specimens obtained have not been identified by the experts to whom they have been sent.

I well remember seeing a certain plant in such abundance that it seemed too common to pick and after hesitating I followed my principle rather than inclination, took several specimens, and made a rare find. (*Silene nutans* L.)

We occasionally hear of a member of this, or some other, association who makes an original discovery through most painstaking search, involving much skill and knowledge. Geological research and interpretation of observations may be of this nature. Botanical discoveries on broad lines, such as involve the distribution of plants and their limitations, may thus originate. The discovery of a new katy-

did by a difference between its chirp and that of eight or nine other species, as was done by a member of this association, obviously requires a peculiarly trained ear and a precision and breadth of knowledge on that particular subject which few are likely to possess.

Too many amateur scientists permit themselves to be so impressed with such discoveries as to consider them evolved through the only process by which new things can be brought forth. Where one discovery is made in this exact manner a dozen, or perhaps hundreds, are picked up by the way-side almost carelessly and are in reality not so much the product of great knowledge as the result of contact. It is this opportunity for contact which enables any interested person to become a factor in the development of the scientific knowledge and material of any locality.

That what I say may not be too general, I will venture to illustrate my belief with the circumstances under which I found the tree, new to the Island, of which branches and leaves have been shown to-night.

Any one who is fond of botany, or who is interested in trees, soon learns that there are but few trees of the birch type, and that among them there are two kinds of hornbeam; one is commonly called hornbeam or blue beech, the other hop-hornbeam or iron-wood.

One who tramps about Staten Island and notices the trees will observe that there are many blue beeches or hornbeams and if when he glances at trees of that character he unconsciously says to himself "hornbeam," he is liable to some day see one over which he hesitates. It may not look quite normal and then he should make sure whether or not it is a blue beech.

It is not safe to assume that the numerous botanists who have tramped Staten Island have discovered every tree and had one been in my place on last election day he would have seen a tree which had a hornbeam look, but on which the bark had not the smooth gray surface of the

blue beech. Inspection showed that it could not be one of the birches nor yet an alder, although its characteristics were so closely related to this small group as to easily suggest hop-hornbeam, and a new tree was added to our list.

I wish to emphasize the fact that this find was a mere casual observation of a tree, by an old road-side, in plain sight, and its discovery might have been made by any one having a moderate familiarity with trees, but no great knowledge. It merely required that someone interested in such matters should be in its presence. It is the getting into the presence of nature that makes one find things, and I wish to again urge that the members of this association roam our island in any way that they may choose, tramping, wheeling or driving, but always remembering that new things even grow by the road side in the midst of civilization, and that it is not necessary to search for unexplored recesses of the woods or distant ravines to obtain material which shall prove of interest.

I have thus far only dwelt upon the general open-eyed way in which new things may be found—the way which makes grist of all that comes to the mill—but it is even better if one can specialize on some line, searching the woods, the ponds and the rocks, closely scanning the fauna or flora of the Island for objects of a certain class, taking common and uncommon together; for in any collection thus assembled something new is almost sure to be discovered.

To some there may be a sense of disappointment in not finding new things each time they go out. It is doubtful whether the most expert scientific hunter finds one new thing in a dozen trips, but he finds pleasure in contact with his familiar friends of the fields and woods. Old things take on new forms especially if viewed at different seasons and constant association leads to the touch that may detect the most subtle differences.

There is often a tendency to think that what another finds is interesting and important, while what one finds himself is

common-place, and scarcely worth reporting. It should, however, be remembered that newness does not consist necessarily of new species or varieties, but of any new habit, locality, phase or attribute of any natural thing; in fact some of the most interesting discoveries hinge not upon the newness of the thing itself but upon the discernment of some characteristic, peculiarity or habit which a common thing possesses. Again let me say that whatever is new to the observer is worthy of attention, whether it be new to others or not.

While it is most natural to seek objects such as plants, animals, insects or minerals, there are many phenomena of nature which are less concrete, upon which observations can be made and reported, within the scope of our organization. Records of winds, rain, lightning, earthquakes, tides, frost, springs, water supply, antiquities and local history may be found in our Proceedings.

Within our membership there are many who are not scientifically inclined who occasionally make an observation which might be of considerable value in the hands of those who are fond of investigation, and it is especially desired that the attention of the more active scientific workers of the Association be directed to such topics by those who are sufficiently interested to observe but who have not the necessary inclination or knowledge to follow up their casual observations.

This meeting is an important one in the history of the Association, marking as it does our removal to the Staten Island Academy, where our collections will be

accessible and our library will be so placed as to permit of its practical use by the members. At a later meeting it is hoped that our museum will be so arranged that it may be made the special topic of an evening, with explanations regarding its several departments, that all may become acquainted with what we have and thus be better prepared to augment it.

It is not intended to altogether give up the desirable features which have surrounded our meetings in private houses, but to hold our meetings at the Academy or at the residences of members as may be appointed from time to time, and as may seem most desirable to those who regularly attend.

I can scarcely close without some allusion to the special publication of the year, "Staten Island Names, Ye Olde Names and Nicknames," with the accompanying map, and the least I can do is to congratulate the authors and the Association upon the merited success which it has met.

We enter this new year of our existence, with fifteen years behind us, in a condition of greater prosperity than ever before and it requires only a little effort on the part of each member to constantly advance the interests of the Association, that the rapid growth of the past few years may continue unchecked.

On motion a vote of thanks to the Trustees of the Staten Island Academy was adopted for their kindness in providing the Association with quarters for its meetings and museum.

On motion meeting adjourned.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 2.

Dec. 12th. 1896.

The regular meeting of the Association was held at the residence of Mr. Walter C. Kerr, Central avenue, New Brighton, with the President in the chair.

Messrs Daniel J. Haverty, New Prigh-ton, and Edward S. Rawson, Port Rich-mond, were elected active members.

A letter was read from Mr. Cornelius G. Kolff, secretary of the Staten Island Chamber of Commerce, inviting the members of the Association to attend the next meeting, when the plan for the establishment of parks, highways, sewerage system and the preparation of tax maps is to be considered.

Mr. William T. Davis read a patent, two hundred years old, for a piece of land that formerly belonged to the Oakley family, which as the following carefully compared copy relates, was laid out in the rear of the Smoking Point lots, that is, at the present Rossville.

AN OLD STATEN ISLAND LAND PATENT.

WILLIAM the third by the Grace of God King of England Scotland Ffrance and Ireland Defender of ye ffaith &c. To ALL to whom these presents shall come sendeth Greeting. WHEREAS our Loving subject Peter Manie and Anthony Tyse of Our County of Richmond planters have by their petition presented unto Our Trusty and well Beloved Benjamin Ffletcher our Captaine Generall and Govenour in Cheife of Our province of New Yorke and Territoryes depending thereon in America prayed our Grant and confirmation of a Certaine parcell of land lying situate and being in our said County of Richmond Beginning at the North east corner of the land of paulus Richards

Now in the Tenner and Occupation of the said peter Minne and runns from thence North twenty degrees West by the Mark-ed trees twenty nine chaine to the rear of certaine Lotts laid out in the rear of the Smoaking point lots and so it runns by the rear of the said Lotts as they runn thirty Three Chaine to a small runn that goes into the meadows and so by the North side of the meadows to the South-west Corner of the land belonging to the said paulus Richards and so by the rear of his said land to the place where begunn bounded South by the land of the sd paulus Richards and the meadows afore-said west by the Small Creeke aforesaid North by the rear of the lotts aforesaid laid out in the rear of the Smoaking point lotts Containeing One Hundred and twenty three acres which reasonable request wee being willing to grant KNOW YEE That of our speciall Grace certaine Knowledge and Mere motion wee have given Granted Ratified and Confirmed and by these presents doe for us Our and^{*} Heirs and Successors give grant Ratifie and confirme unto the said peter Minne and anthony Thyse all the aforerecited certaine parcell of land within the 'imitts and Bounds aforesaid Together with all and Singular the woods underwoods trees Timber meadows marshes Swamps waters watter courses runns Streams rivers rivo-letts pooles ponds ffishing ffowling hunt-ing and Hawking and all other proffitts benefitt advantages priviledges righths hereditaments and apurtenances whatso-ever unto the aforerecited Certaine parcell of land within the Limitts and bounds

^{*}This is a superfluous word and was no doubt written by mistake in the original patent.

aforesaid belonging or in any wayes apurtaineing TO HAVE AND TO HOLD all the aforerecited certaine parcell of land within the limitts and Bounds aforesaid together with all and Singular the woods underwoods trees timber meadowes marshes Swamps watters watter courses runns Streams rivers rivolets pooles ponds ffishing ffowling hunting and Hawking and all other profitts benefitts advantadges priveledges rights hereditaments and apurtenances whatsoever unto the aforescited Certaine parcell of land within the Limitts and Bounds aforesaid Belonging or in any wayes apurtaineing unto the said peter Minne and anthony Thyse their heirs and assignes to the sole and only proper use benefitt and Behoofe of them the said peter Minne and anthony Thyse their Heirs and assignes forever TO BEHOLDEN of us our heirs and Successors in fee and common Soccage as of Our Mannour of East Greenwich in Our County of Kent within our realim of England YIELDING Rendering and paying therefore yearly and every year forever unto us our Heirs and Successors at Our Citty of New Yorke on the feast day of the Annunciation of our Blesed virgin Mary the yearly rent of Six Shillings Currant money of our Said province in Liew and Stead of all other rents services dues dutys and demands whatsoever for the said certaine parcell of land and premises IN TESTIMONY whereof we have caused the Great Seal of our said province to be hereunto affixed WITNESS our said trusty and well Beloved Benjamin Ffletcher our Said Captaine Generall and Governour in Cheife of the province of New Yorke and Territoryes depending thereon in America and vice Admirall of the same our Lewt and Commander in Cheife of the Militia and of all the forces By Sea and land within our Collony of Connecticutt and of all the fforts and places of Srength within the Same in Councill at New Yorke the Twelfth day of October in the Eighth year of Our reigne Annoqz Domini 1696

BEN. FFLETCHER

By his Excellencys Command
DAVID JAMISON Secry

The following is endorsed on the back of the parchment:

Secrys Office Province of New Yorke Entered upon Record in the Booke of Patents begunn Anno 1695 page 140 141 & 142 By his Excellencys Warrant

DAVID JAMISON, Secry.

Mr. Davis also presented the following note on

THE HOP-HORNBEAM AT THE NARROWS.

In connection with Mr. Kerr's note on the hop-hornbeam, (*Ostrya Virginiana* (Will) Willd.) in the November Proceedings, the fact may be worthy of record, that the tree grows on the Long Island shore, on the steep terrace near Fort Hamilton and the Narrows. A number of trees were noted to-day in a walk along the road leading to the fort, and where good sense has prevailed in leaving the natural slope undisturbed, the trees are quite numerous. The land is now a part of the King's County park system, so it is probable that many of the trees will be preserved. There are also a number of hop-hornbeams on the natural terrace on the Staten Island side of the narrows.

Mr. Kolff, compiler of the pamphlet on "The Property, Commercial, Shipping and Industrial Interests of the Island," published by the Staten Island Chamber of Commerce, read the following extract upon the

OYSTER INDUSTRY.

The oyster industry is carried on mainly on the east side of the Island, between Elm Tree Lighthouse, near New Dorp, and Ward's Point, at the extreme southern point of the Island—this district embracing the cultivated grounds—while the whole west shore of the Island, from Tottenville to Holland's Hook, embraces the natural growth district. The oysters are usually taken from the natural oyster beds along Staten Island Sound and Newark Bay, and planted on the east shore of Prince's Bay, where they are again transplanted at the end of about three years.

A great many Staten Island oysters are shipped to Europe, where their excellent quality commands a ready market. A large quantity of seed oysters are sent annually to California. There are planted annually about 125,000 to 150,000 bushels of oysters, while the out-put annually is estimated at 200,000 bushels. There are from 400 to 500 men employed in the oyster business, while from 75 to 100 oyster sloops of from 5 to 35 tons, are necessary to carry on the business. A number of Staten Island oystermen own oyster beds along the Atlantic coast from Maine to Georgia.

Mr. Arthur Hollick sent the following memorandum on

RECENT LITERATURE RELATING TO
STATEN ISLAND.

The Flora of the Amboy Clays Monog. U. S. Geol. Surv. Vol. XXVI.

House of Representatives, 54th. Congress, Document No. 411, 4to. pp. 260, pl. I-LVIII. Washington, Govt. Printing office, 1896. A posthumous work by J. S. Newberry, edited by Arthur Hollick.

In this work the identity of the Amboy clays with those at Kreischerville and vicinity is noted and many of the species of fossil plants described and figured are the same as those which have been found on Staten Island and shown from time to time at our meetings.

MINOR MEMORANDA, ETC.

Mr. J. B. Hillyer presented a large fungus, collected by Mr. E. F. DuBois at West New Brighton.

Mr. Eric T. King exhibited fossil plant remains from the bluff at Tottenville, collected by himself and Mr. Hollick.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 3.

Jan. 9th, 1897.

The regular meeting of the Association was held at the residence of Mr. Arthur Hollick, with the President in the chair.

Messrs. Orrin S. Wood, Fort Wadsworth; G. A. Irving, New Brighton; W. B. Thomas, New Brighton; and William F. Hunt, West New Brighton, were elected active members.

The following resolutions were adopted:

That the Secretary be instructed to issue a public appeal for maps, prints, photographs, etc., relating either wholly or in part to Staten Island and to take such other action as he may deem advisable, to the end that such objects may be collected and preserved by the Association as matters of historical interest.

That the Secretary be instructed to communicate with the secretary of the Greater New York Commission, to the effect that it is the sense of this Association that the name "Borough of Staten Island" be used, in preference to "Borough of Richmond," in the charter of Greater New York.

Mr. Walter C. Kerr exhibited a drawing of an elm tree, with buttressed roots, observed in the Bull's Head woods, and read the following paper:

BUTTRESSED ROOTS.

The tendency of certain plants to expose parts of their roots above ground has furnished material for much discussion among botanists, as it is by no means evident why parts normally performing their functions below the surface should depart from their habit and seek a location eminently unsuited to the absorption of nourishment from the earth.

The most striking example is found in

the cypress knees which abound in great numbers and sometimes reach a height of ten feet. Indian corn will send roots into the air, which bend downward and again enter the soil. The Water Tupelo surrounds itself with a mass of roots ascending and turning down sharply, thus leaving knees exposed. The Pond Pine has a somewhat similar habit; *Mikania scandens*, several *Eupatoriums* and many other plants, especially tropical ones, dispose their roots in a similar manner, though not so conspicuously. In elms and maples the exposure takes the form of buttresses, or plank-like growths on top of the roots lying near the surface, and a Tapang tree in Borneo is described as throwing out a buttress fourteen feet long, twelve feet high at the trunk, tapering to three feet at the outer end, and only two inches thick. The sides are straight and covered with a thin bark.

The tendency of elm roots to buttress is noticeable even in our shade trees along the streets, but under favorable conditions typical buttresses develop as shown in the specimen submitted by drawing, from the Bull's Head woods south of the Turnpike. Here on a white elm, ten inches in diameter, the buttresses are from one to two inches thick, and over a foot high at the trunk, tapering to the ground at points two to five feet distant. They are like thin boards set edgewise on the roots, which are just at the surface.

The presence of knees, buttresses and any form of exposed root structure is almost invariably accompanied by a superabundance of moisture and usually by actual immersion of the roots in water.

This has led to the explanation that water-

soaked ground impaired the ability of the roots to support the tree and that these strange growths were braces and anchors developed for preservation. While superficially this may seem plausible it does not explain why a twining plant like *Mikania*, which is not supported by its roots, should have such characteristics.

The common supposition that mechanical adjuncts to organisms will develop in response to the desirability of their mechanical or extraneous functions is scarcely warranted by the fact that many things which evolve are thus serviceable. The variations in the organism which yield opportunity for beneficial differences to develop must lie deeper than convenience or mere preservation of the structure as a gross unit. The actuating cause must be closely linked with the life functions of the living thing, and the result must be an effect upon the tissues which are in process of formation. It is when that part of a tree which is composed of the living, growing cells is threatened with impairment that nature may evolve defensive means and not when the tree as a whole is in danger of toppling over. It is life that is protected, not that which has lived.

With this view of the origin of new and unusual features it will appear that the excess of moisture around certain roots must have threatened the life processes of the plant while the strange growths counteracted this baneful influence and only incidentally became mechanically beneficial by giving substantial support in yielding ground, which support could have been further improved had this been the real object.

When once evolved there seems no reason why in time such growths might not be handed down as specific characters and be retained, even serving no other purpose than mechanical support when the conditions under which they originated are no longer present.

In accounting for the exposure of roots above ground which is saturated with moisture, it is necessary to determine in what way an excess of water interferes

with the life functions, and this is found in the smothering, or interference with respiration. The process of breathing in plants is but imperfectly known, but it is well determined that plants inhale air, the same as animals, absorbing the oxygen and exhaling carbon dioxide; also that the respiration is largely through the roots. This process was long shrouded by the more vigorous action of nutrition in which the plant imbibes carbon dioxide through the leaves, retaining the carbon and setting free the oxygen as a waste product.

Where plants grow in proper soil they bury their roots to various degrees, according to their habit. If the ground be too wet many cannot survive. The roots of some, however, push up into the air sufficiently for respiration and then turn down to perform their other functions, thus forming knees as in the Cypress. Some send up rootlets to float on the surface as in *Mikania*. Others keep above the water and grow laterally into the air, forming buttresses, as in the Elm.

The subject of aeration of plants and specialized roots as aerating organs, the structure of such roots and the exact method in which they perform their functions offer an excellent field for investigation.

Among the few references on the general subject of aerating organs none have been found concerning buttressed roots. Our Bull's Head woods offers ample material in its white elms, nearly all of which within a considerable low lying area have thus developed.

Mr. Arthur Hollick exhibited specimens and drawings of plant remains in limonite and read the following note:

MONOCOTYLEDONOUS PLANT REMAINS IN LIMONITE.

At our meeting of Oct. 13th, 1894, I exhibited similar specimens to those now shown. They were all found in limonite conglomerate forming part of the moraine material which was uncovered in the gravel pit on the Fingerboard road, near Sir Roderick Cameron's place. Those

first found consisted mostly of striated, jointed stems, which I took to be fragments of some *Equisetum* and published my conclusion to that effect. (Proc. Nat. Sci. Assn. S. I., Vol. iv, p. 38). Subsequently I again visited the locality and succeeded in finding considerable additional material, consisting not only of the upright stems but also of what are apparently underground stems or rhizomes. Carefully prepared drawings were made of all the parts and from an examination of these I am now convinced that they can not be referred to *Equisetum* but must be regarded as monocotyledonous and closely related to some reed-like grass, such as *Arundo* or *Phragmites*.

Fossil species have been described under these genera (*A. Goeperti* Heer, *P. Eningensis* A. Br.) from Miocene strata in Europe, Greenland and the western United States, which, except that they were apparently much larger than ours, could hardly be distinguished from them. The similarity to the last mentioned species is particularly striking, as may be seen by a comparison with Heer's figures in his *Flora Tertiaria Helvetiæ* and *Flora Fossilis Arctica*. The smaller size of ours, however, and the probability that it came from beds representing a more recent geologic horizon, would indicate that it should be regarded as a distinct and new species.

The conditions under which the specimens were found were described in my former paper and it is sufficient now to briefly say that they were in all probability derived from some of the eroded limonite areas on our serpentine hills and that they carry with them the fragmentary remains of the swamp vegetation which grew around the old lake basins in which the limonite was deposited.

Fossil grasses are comparatively rare in any locality, and are almost unknown from the eastern United States, so our find is of interest aside from the probability that it represents a new species.

Mr. Hollick also exhibited and gave the following account of

A MANX CAT AND KITTEN.

The variety, or perhaps valid species of *Felis domesticus*, which is known as the Manx cat, is native to the Isle of Man, England, and is specially characterized by its lack of a tail and greater height of hind quarters as compared with the fore quarters. There are also other minor features, all of which serve to emphasize the difference between it and the common domestic cat.

This one, which has recently come into my possession, was picked up by a road side, near Kingston, Rhode Island, and it was a matter of doubt at the time whether the animal was a Manx cat or merely a common one which had lost its tail. Its pedigree was unknown, but it is a female and has since had three litters, each of five. The first one consisted of two kittens without tails and three with tails; the second of three without and two with; the third of two without and three with, and it is one of these last two which I am able to show to-night. The mother's pedigree seems therefore to be pretty well established.

She is an exceedingly affectionate animal and has readily adapted herself to circumstances. She will not tolerate the presence of any other cat, however, and has already driven our two common cats from the premises. She also appears to be entirely devoid of fear and never hesitates to attack any dog which appears in sight, without the slightest provocation.

Mr. Wm. T. Davis read the following botanical notes:

A CONSPICUOUS GROWTH OF THE SCOURING RUSH.

The scouring rush (*Equisetum hyemale* L.) grows for about two hundred feet, and to almost the exclusion of other vegetation, along one side of the south branch of New Springville brook. Some of the stems reach their maximum height of four feet and fall across the little brook, which is only about three feet wide and is often dry. The plant, however, though so common on one side of the stream, has not succeeded in establishing itself on the op-

posite bank. This is the most considerable growth of the scouring rush observed on the Island, and at this season of the year the miniature forest of evergreen stems presents a memorable picture.

A LARGE WHITE PINE.

Not far from the *Equisetum* patch mentioned above, but nearer to Poverty lane, there stands a large white pine, that towers above the surrounding forest trees. It measures 10 feet 3 inches in circumference; the earth is terraced up to its trunk, and altogether it is one of the finest pines remaining on the Island. In the fall of 1892 it was a favorite perching place for a fish-hawk, that brought the fish it caught to the upper branches, where they were devoured at leisure and the bones and scales scattered on the ground below.

MISCELLANEOUS MATERIAL, EXHIBITED.

Mr. L. W. Freeman presented specimens of Helderberg limestone, from a Drift boulder, found on Richmond turnpike, near Silver Lake. Also a number of arrow heads and fragments of indian pottery from Arlington.

Capt. Robert D. Wainwright presented indian implements from the vicinity of Tottenville.

Mr. Wm. D. Twiggs presented indian implements and pottery, Yellow Gravel pebbles, containing silicified fossils, collected at various localities at the southern end of the Island, and cones of Cedar of Lebanon, from a tree in the grounds of the Woods of Arden.

Mr. J. B. Hillyer exhibited a finely prepared museum specimen of flexible sandstone from North Carolina.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 4.

Feb. 13th, 1897.

The regular meeting of the Association was held at the residence of Mr. Howard R. Bayne, New Brighton, with the President in the chair.

Messrs. Arthur O. Townsend, Clifton, Samuel M. Dix, Clifton, and Frank S. Hodge, Tottenville, were elected active members.

The Secretary called attention to the death, on January 8th, of Mr. Robert I. Fearon, who was one of the oldest members of the Association, having been elected in 1881. Mr. Fearon always maintained an active interest in the welfare of the Association although seldom attending a meeting.

Mr. R. A. Parke read the following review and criticism of a work by Mr. Stephen H. Emmens, of No. 20 Central avenue, New Brighton comprising an octavo pamphlet of 149 pages, entitled

THE ARGENTAURUM PAPERS. No. 1. SOME REMARKS CONCERNING GRAVITATION.

At the last monthly meeting of the Association, a voluminous document, entitled "The Argentaurem Papers. No. 1 Some Remarks Concerning Gravitation," by Stephen H. Emmens, was referred to me for review and criticism. This document is addressed to all associations learned in the sciences, the more prominent of which are designated by name. The objects of the document are stated by the author, as follows:

1—To demonstrate the existence of some defects in the mathematical reasoning by which the Newtonian doctrine of

gravitation is commonly held to have been firmly established.

2—To establish a doctrine of Gravitating Centres.

3—To deduce a Centrifugal Theory of Cosmical Bodies.

4—To point out the bearing of such Centrifugal Theory upon certain geological, astronomical and physical phenomena.

5—To deduce an Arch Theory of the Earth's Crust.

6—To demonstrate the existence of some defects in the now-accepted teachings of scientific authorities with regard to gravitation in general.

8—To present the outlines of a System of Universal Physics, by which Gravity, Cohesion and Elasticity may be brought into correlation with the other physical forces

In-as-much as the entire structure must collapse if the foundation be unstable, it appears to be unimportant to discuss the various conclusions of the author of the document, if he has failed to establish his first recited proposition (that there are inherent defects in the accepted doctrine of gravitation), upon which his subsequent conclusions almost entirely depend. That he has utterly failed to effectively discredit any single essential principle of the Newtonian structure, is perhaps a less remarkable characteristic of this extraordinary document, than is the astonishing misapprehension of Newton's doctrine which he has attributed to the whole scientific world, on the one hand, and the singular character of the errors of his reasoning, on the other hand.

The fundamental error in the author's conception of accepted doctrine, is betrayed in his explicit statement that it is commonly held that the effect of attraction, upon or by any mass, is the same as if the entire mass were concentrated at its geometric centre of gravity. It is impossible to understand how so gross an error could be intelligently attributed to students of science and mechanics.

It is true that, wherever a definite mass attracts (and is therefore attracted by) an external particle, there may always be found some point upon a line passing through the attracted particle in a particular direction, at which the attracting mass, if concentrated at that point, would produce the same attractive effort upon the external particle. For convenience of reference, such a point may be designated as the centre of attraction with reference to that particle, in its particular position. Assuming that the attractive force between two particles varies inversely as the square of the distance between them, the distance of the centre of attraction of a homogeneous mass from the attracted external particle is determined by multiplying the reciprocal of the square of the distance of each particle of the attracting mass from the attracted particle by the direction cosine of this distance, taking the sum of all these products, and dividing the sum by the total number of attracting particles.

The distance of the centre of gravity of the attracting mass from the attracted particle, is determined by a summation of the distances of all the particles of the attracting mass from a fixed plane passing through the attracted particle, and dividing this sum by the total number of attracting particles.

It is difficult to conceive that two such utterly different operations should produce identical results, under any conditions as to the physical form of the attracting mass. The centre of gravity of a homogeneous mass is a fixed point, the location of which depends simply upon the geometrical form of the mass. The centre of attraction of a homogeneous

mass, with reference to an external particle, is ordinarily a movable point, the position of which, in any particular case, depends upon the distance of the attracted particle from the mass, the geographical location of the particle with respect to the mass and the geometrical form of the mass itself. In the case of that perfect exponent of symmetry, the homogeneous sphere, it occurs that the centre of attraction is a fixed point which coincides with the centre of the sphere, as does also its centre of gravity. Newton, by an ingenious geometrical demonstration (which is attacked in the document under consideration), proved this. His method was that of reasoning, and might, therefore, be open to logical discussion and dissent; but his conclusion has long since been mathematically proven to be an exact fact, which, if it be true that the attractive force between any two particles of matter varies inversely as the square of the distance between them is no more assailable than is the multiplication table. That Newton's law of the inverse square of the distance, in determining the force of gravitation, is *universally* true, cannot, of course, be proved. Its truth can only be asserted absolutely, so far as our observation extends. But the observed facts, first formulated in Kepler's laws and confirmed by all subsequent investigations, leave no room for reasonable doubt that the same law prevails beyond the restricted arena of our observation.

Newton fully understood, however, and it has always since been recognized, that in other forms of matter than that of the homogeneous sphere, or of a homogeneous spherical shell, the centre of attraction may not, and, except in particular cases, does not coincide with the geometrical centre of gravity. In the case of spheroids of small eccentricity, such as most of the planets, attracting or being attracted through distances very great in comparison to their diameters, the centre of attraction practically coincides with the geometrical centre of gravity; but, with reference to bodies near their

surfaces, and with reference to their satellites, it is fully understood that what we have here termed the centre of attraction is not a definitely fixed point at all, but occupies materially different positions with reference to different bodies or different relative positions of the same body. This fact explains certain perturbations of the satellites, which result from the different attractive force of their planets upon them, in their varying angular positions with reference to the axis of the planet.

The earth's attraction for every mass upon its surface, with which the physicist has to deal, so nearly coincides with what its attraction would be if each such mass could be concentrated at its geometrical centre of gravity, that no measurable error is introduced by assuming that the centres of attraction of all such objects, with reference to the earth, are situated exactly at their geometrical centres of gravity. This is due to the insignificance of the dimensions of all movable terrestrial objects, in comparison with the distance from the earth's surface to its centre of attraction for any such object.

It appears probable that the erroneous assumption of the author of the paper under consideration, with respect to the accepted understanding of Newton's doctrine, has grown out of this customary treatment of the earth's attraction upon such movable masses as come within the ordinary domain of mechanics and physics.

One of the most notable errors of reasoning on the part of the author, in his attacks upon the demonstrations of Newton and others, is due to his total misconception of the ultimate ratios between vanishing quantities. In Newton's proposition demonstrating that the centre of attraction of a homogeneous spherical shell, with reference to an external particle, is always coincident with the geometrical centre of the shell (Proposition LXXI, Book 1, Principia), he makes use of the ratio of the length of a line determined by a certain angle, to the

length of another line determined by another angle, as the two angles simultaneously vanish. Owing to the nature of the geometrical constructions employed, the ratio of these two lines constantly approaches more nearly to unity as the two angles decrease in magnitude, and consequently becomes unity when the angles simultaneously vanish. The author of the paper under consideration draws from this incident the remarkable conclusion that the ratio of any other two vanishing quantities ultimately becomes unity. Familiarity with the Calculus (without which, no one can properly investigate the theory of attraction) would have effectually averted such an absurd conclusion. A single illustration will demonstrate its fallacy. It is commonly known that the ratio of the circumference of a circle to its diameter is about 3.1416, or, approximately, as 22 is to 7. This ratio is entirely independent of the actual magnitude of the circle, and therefore holds when the circle becomes exceedingly small (as toward the apex of a right cone) and ultimately vanishes. When the circle becomes so small that the length of the circumference is too small for any assignable value, it becomes mathematically equal to zero. Similarly, the length of the diameter becomes mathematically zero, although neither of these quantities is to be necessarily considered as actually zero. The ratio of the two quantities is, however, still as 22 is to 7, notwithstanding the fact that each quantity is mathematically zero.

Another gross error, which leads the writer far astray, is the assumption that, if the centre of attraction of a spherical shell is located at the centre of the sphere, so also must the centre of attraction of any portion of the spherical shell be similarly located at the centre of the sphere. It might as properly be concluded that, because the centre of gravity of the spherical shell is coincident with the geometrical centre of the shell, the centre of gravity of any portion of the shell is also coincident with the centre of the shell.

Every department of the document abounds in errors and absurdities, which might be cited; but it is believed that, by thus exhibiting a few of the more grotesque, the matter has been sufficiently traversed to expose the groundlessness of the whole fabric. It is difficult to believe that the theories of the document have been suggested by mature reflection upon supposed inconsistencies, discovered while prosecuting an unprejudiced investigation of the laws of attraction. It appears far more credible that, the author's theories having been conceived, the fundamental theorems of various writers upon gravitation have subsequently been superficially scanned for the purpose of detecting flaws, the exposition of which might justify the announcement of the new theories. It is sufficient to say of these theories, that none of them are substantial, in so far as they depart from what has heretofore been fully understood, and the document, therefore, contributes nothing of importance to the promotion of scientific knowledge.

Mr. Thomas Craig exhibited specimens of rhizopods and made the following remarks:

RHIZOPODS AS SCAVENGERS.

I thought it might interest the members to see what a very small animal can do as a scavenger.

The bottle before you was covered on the inside with a growth of algae, consisting principally of *Coleochaete*, *Chaetophora*, and a small diatom. So great was the accumulation that the bottle was practically opaque and the contents inside were invisible.

On looking at it a couple of weeks ago, preparatory to cleaning it, I observed that a portion of the glass near the bottom was clear. A further examination with a hand magnifier showed that the cleaning was the result of an army of rhizopods, marching in regular order, and eating as they marched.

The name of the animal is *Centropyxis aculeata*—one of the lobose rhizopods.

The animal itself is only a drop of

jelly, in which the highest powers of the microscope reveal no organization of any kind, yet it can travel by means of pseudopodia, which are simply parts of the body protruded from any part of it. By the same means it can seize its food, convey it inside its body and then digest it, and when all the nutriment is exhausted cast the refuse out. This it does at any part of its mass, as it has neither head nor tail.

This particular animal builds a shell for itself, composed of a material like chitin, and grains of sand, or the empty shells of diatoms. The chitin is produced by the animal and is used to cement the grains of sand or other material into the proper form of house for this particular species.

Each species has its own form of habitation and it is rare to find them departing to any great extent from the standard of their fore-mothers.

I submit also an enlarged drawing of the shell or test copied from one of Leidy's illustrations.

The animal is included in Dr Congdon's list published by the Association in Nov. 1884

Mr Hunt has kindly placed some under the microscope for examination.

Capt. Robert D. Wainwright presented a number of bones, representing parts of two indian skeletons, recently exhumed at Tottenville, and read the following account of the same:

A RECENT DISCOVERY OF INDIAN SKELETONS AT TOTTEVILLE.

On January 27, having received permission from Mr. C. H. Leland, with the assistance of Mr. John Cochran, I made several excavations on the old Billop estate, on the land next adjoining that of Mr. Decker. About a half a foot down, in the last trench that we dug that day, we came to a bed of oyster shells, thickly packed, evidently the remains of an old indian feast. There I found fragments of human bones, ribs, vertebrae, teeth, parts of a skull, etc. Many of the bones had been burnt, and all were

thoroughly mixed with the shells. Continuing the main trench further, and at a much lower depth, in mixed sand, the lower bones of the leg, including feet and toes, lying parallel to each other, were found. These limbs were packed on the sides by broken clam shells. Not finding any implements, I concluded that as the body of the indian had been burnt from the knees upward, he had met his death by fire.

Again, on the 30th inst., Mr. Cochran and myself found the perfect skeleton of an indian. First, digging through a foot of sandy loam, we came to oyster shells, then through half a foot of this material, after which we came to mixed sand. About a foot down lay the skeleton, head towards the east, face facing north, lying on the side, the ribs over towards the left, knees drawn up, arms close to the body, hands before the face, middle finger of the right hand in the mouth, on which the teeth were closed tightly. In front of the hands was a ball of sand, inclosing deer bones, flanked on its eastern side, by a tortoise shell. This skeleton measured 7 feet 4 inches. Several conch shells were found lying some distance away, seemingly pointing towards the skeleton. No implements were found. On taking up the skeleton, which was done most carefully, it went to pieces and became much broken, as may be seen from its present condition.

Mr. Wm. T. Davis presented several old prints, representing Staten Island views; and read the following memorandum relating to them:

OLD STATEN ISLAND VIEWS.

The Association has received from Mr. Jacob R. Telfair a copy of a pamphlet entitled "Description of New Brighton, on Staten Island, opposite the City of New York," published by the New Brighton Association in 1836. The account is accompanied by a map of the property and a rather idealized colored view of New Brighton and what is now

known as St. George. A later and still more idealized and colored view, published about 1880, by a company in which Mr. Erastus Wiman was interested, also contributed by Mr. Telfair, shows what beautiful villas were to be built at St. George, on the ground now occupied by freight trains and trolley cars.

Mr. Davis stated that these prints had been received in response to the notice that such objects were desired by the Association and that he expected shortly to obtain further similar material.

Mr. Arthur Hollick read the following memorandum:

RECENT LITERATURE RELATING TO STATEN ISLAND.

Geological Survey of the State of New York. Preliminary Geologic Map of New York, exhibiting the structure of the State so far as known Prepared under the direction of James Hall, State Geologist, by W. J. McGee. 1894. This map is the result of co-operation between the State and National Geological Surveys. The scale is five miles to one inch, which is large enough to show all the roads as well as the natural features. The various geological formations, wherever they have been identified, are represented in colors. Staten Island is included and it is worthy of record that the data for our Island were largely contributed by certain members of this Association.

The map is in six sections, each about 2 feet by 3 feet 3 inches. Long Island occupies one of the sections by itself and is not colored.

MISCELLANEOUS MATERIAL EXHIBITED.

Mr. Davis exhibited a portion of an ornamented clay pipe and a rubbing stone, from the Tottenville shell heaps. Amongst the many kinds of indian relics found on the Island but few examples of these have come to light. (See Proc. Nov. 12, 1887, and April 8, 1893.)

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. VI. No. 5.

March 13th, 1897

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton. In the absence of the President Mr. R. A. Parke was elected chairman *pro tem*.

Messrs. Lester W. Clark, New Brighton, and Edward M. Stothers, Port Richmond, were elected active members.

The Secretary reported having written to Assemblyman George Garby, protesting against a proposed amendment to the Act for the Protection of Song and Wild Birds, (Chapter 427 of the Laws of 1886), designed to permit the shooting of meadow larks on Staten Island from Sept. 15th to Dec. 31st.

On motion the action of the Secretary was approved and he was further authorized, in the name of the Association, to take any additional action which might tend to defeat the proposed amendment.

The Secretary also reported having issued the following appeal, in accordance with the instructions of the Association :

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

Organized Nov. 12th 1881.

Incorporated Feb. 15th, 1885.

The Association desires to obtain files of old Staten Island newspapers, books, pamphlets, maps, prints, or pictures, relating either wholly or in part to the Island, or any other objects of local historical or antiquarian interest.

The Association is now housed in safe and readily accessible quarters, in the Staten Island Academy, and is in a position, for the first time since its organization, to assure that all donations will be properly arranged and cared for.

Communications may be addressed to the Secretary Arthur Hollick. New Brighton.

On motion the Secretary was instructed to use his discretion in obtaining the

greatest possible publicity for the above notice.

Mr. Wm T. Davis exhibited shells of land turtles and read the following paper :

THE COMMON LAND TURTLE.

In the "American Naturalist" for January, 1887, an account was given by me of the "Color of the Eyes as a Sexual Characteristic in *Cistudo carolina*," the common land or box-turtle. So far as I am aware this fact had not been pointed out before, but it has since been included in the fifth edition of Jordan's "Manual of the Vertebrate Animals of the Northern United States," and now forms one of the accepted characters whereby sex may be distinguished in this tortoise.

Since January, 1887, the color of the eyes in thirty male and twenty-nine female turtles has been noted, with the result of proving the earlier observations. The eyes in the males were found to be red or scarlet, or occasionally yellow. Of the thirty individuals examined, three had yellowish-red eyes, and in one old male found near Richmond village in October, 1889, they were entirely yellow. The twenty-nine females had mostly brown eyes, a few very dark gray, and in three individuals they showed a yellowish tinge. In May, 1892, an old female turtle, with nearly all of the outer mottled shell worn off her bony coat of mail, was found near Old Place. The eyes in this specimen were terra cotta red, and were in consequence rather an exception to the rule, but even in this case the iris was not of the more vivid hue so common in the males.

Male land turtles may also be distinguished from the females by the depression in the hind portion of the lower shell or plastron; also, the upper shell appears to be generally more rolled or turned outward at its edge. The males are also usually of a lighter color, both as regards their shells and the scaly covering of their legs and heads.

Land turtles are to be found in all parts of the Island, but owing to many causes are gradually becoming less common. They are recognized as harmless, most people regarding them as quaint and interesting animals, and many are lugged home by small boys only to escape in time and find their way back to the open woodland or overgrown fields, in which they especially delight. Nevertheless a great many are unintentionally killed; are run over in the roads, or are killed on the railroad tracks. They follow along the rails and finally get wedged in the switches and are crushed by passing trains. The pernicious habit of burning the underbrush kills many turtles, and their blackened shells may often be found. I have come upon several turtles shortly after they had been roasted alive in their own ovens.

Occasionally they are killed for food by human beings. In the summer of 1888 the old farm house at the head of Mersereau's Valley was tenanted by Italians, who dug several little fire places, about which lay the shells of six land turtles, that had evidently furnished a feast.

Young turtles, that are not protected by shells of very great strength, are easily killed and two have been found on the Island that seemed to have been pecked open by crows.

On the 15th of July, 1890, a land turtle was found lying in a field at Mariners' Harbor with its head stretched out to its fullest extent. It was blind, the eyelids swollen, and when it found some creature was near, perhaps an enemy, it did not know whether to keep its head in or out. It was uncertain, after the first sound of my foot-steps, whether I was present or

not. Later in the same year another turtle was found at Green Ridge lying in a dry brook-bed and was evidently in great pain. Its throat and neck were so swollen that it could not pull its head into its shell.

Several captive land turtles that I had in 1879 buried themselves about the 18th of November. They do not go very deep. Mr. Leng and I found one some years ago in the Clove Valley, on the 8th of February, that had taken up its winter quarters under about six inches of leaves, etc., in a natural depression of the ground. One was found in a similar situation on 22nd of February, 1888, only in this instance the hole had become filled with water. It had evidently gone into winter quarters when the little depression in the ground was dry and filled with leaves, but it seemed none the worse for its sleep under ice and for its soaking. No doubt, however, many turtles die while in winter quarters. Mr. Joseph W. Mersereau has informed me that previous to the hard winter of 1856-57 they were much more numerous at Mariners' Harbor than he has since found them, and he thinks that many died in consequence of the cold. The increasing settlement of the land at Mariners' Harbor has of course prevented the turtles from regaining their former numerical strength.

I have found a land turtle just leaving winter quarters on the 1st of May in the Bull's Head woods. In the Clove Valley, on the 8th of May, 1887, a male turtle was found in a hole about five inches deep. About a yard away another partial opening was observed, which upon being made wider disclosed a female turtle still in winter quarters. I find in examining my notes, that so far I have not observed a land turtle voluntarily walking about previous to the 1st of May. If they have been seen before that date, it was because they were dislodged from their retreats either by freshets or my own efforts. A friend, however, has informed me that he has found land turtles in April, walking about the dry sandy fields, at Tottenville.

Captive land turtles require water, and drink somewhat after the manner of ordinary fowls. They stick their heads into the water and then hold them as high as possible, so that the water will run down their throats. I have twice found land turtles in brooks; once in the Clove Valley and once, on the 1st of September, near Richmond, where a female turtle was discovered in a shallow part of a brook, as if she enjoyed bathing greatly. She drew her head under the water and regarded us through that medium.

The common land turtle eats a great variety of things. They like strawberries very well, and I have twice found them eating toadstools and seen a number of others out of which they had taken a bite. They are also fond of animal matter and in confinement may be fed on raw meat. On the 19th of June, 1892, I surprised a box turtle in the act of devouring the droppings of some mammal, probably a mink. It was in the woods on the border of a swamp back of the Moravian cemetery.

Land turtles usually retire within their armour when approached, but now and then one is met with that seeks safety in flight, but they are not graceful runners. Often they will be seen hurrying across a road, and some years ago, near Willow Brook, on the 11th of June, two were observed, one pursuing the other with much haste. Upon a nearer approach it was discovered that it was a male and female, the former being the pursued party. On the 4th of July, 1888, I heard a turtle coming down a hill over some dry leaves, and went to see the color of its eyes. When it saw me approaching, instead of closing its shell, it turned and scrambled as fast as possible up the hill again, and even when held in the hand, it made every effort to get away. This lively individual also proved to be a female.

Mr. Arthur Hollick read the following review :

RECENT LITERATURE RELATING TO STATEN ISLAND.

Report on Artesian Wells. Lewis Woolman. Ann. Rept. Geol. Surv. N. J., 1895. Trenton, N. J., 1896; also reprinted.

On pp. 90-95 are given the records of a number of wells bored on Staten Island and in the adjacent territory of New Jersey.

On Staten Island are :

Otto Jaeger's residence, Tottenville :

Hardpan, gravel and clay . . .	25 ft.
Red sand	12 "
	—
	37 ft.

Water, 10 gallons per minute.

Elevation of surface, 15 feet above tide level.

Abram Cole, half way between Tottenville and Kreischerville :

Hardpan, gravel and clay, mixed	30 ft.
Sand	6 "
	—
	36 ft.

Water, 5 gallons per minute.

Surface elevation, 15 ft.

Albert Killmeyer, Kreischerville :

Gravel	4 ft. =	4 ft.
Sand	36 " =	40 "
White clay	21 " =	61 "
White sand.	30 " =	91 "
Blue clay.	10 " =	101 "
Fine white sand . . .	90 " =	191 "
Sandstone (black). . .	3 " =	194 "
Quicksand	2 " =	196 "
No water.		

MISCELLANEOUS MATERIAL EXHIBITED.

Mr. Thomas Craig exhibited the following specimens, under the microscope :

Melicerta ringens which had been fed on indigo, causing the animal to utilize it in the construction of its test, which was of a beautiful blue color instead of the normal reddish yellow.

Nitella flexilis, in order to show circulation, and *Oscillaria* sp. ?

A lichen in process of development, showing the combination of alga and fungus.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 6.

April 10th, 1897

The regular monthly meeting of the Association was held at the residence of Mr. Walter C Kerr. In the absence of the President, Capt. A. L. King was elected chairman *pro tem*.

Messrs. Lester W. Clark Jr., New Brighton, and Geo. L. Harrison, Princes Bay, were elected active members.

Mr. E. C. Delavan exhibited tracings made from maps of old land grants at the north eastern extremity of the Island and read the following paper:

A CASTLETON BOULDER LINE.

From a point of view at the intersection of the Richmond turnpike and the division line between the lands of John J. Cisco and A. Duer Irving, there may be seen, stretching away to the northward, a line of boulders which may be followed as far as Castleton avenue. This line will be found to be nearly in range with a stone wall extending through the lands of the late S. T. Jones, and, if extended to the waters of Kill Van Kull, would be found to be about midway distant from Jersey street brook on the east and the east boundary of Sailors' Snug Harbor on the west.

The territory lying north of the land since known as the glebe, and other land that came into the possession of Governor Dongan, bounded easterly by the Jersey street brook and by the land familiarly known as the Van Buskirk farm, and on the west by lands now included in Hart Park and the Sailors' Snug Harbor—such territory being a part of the plantation occupied by Colonel Francis Lovelace until the capture of his province by the Dutch led to the forfeiture of his

estates—was granted by Sir Edmund Andros, Lieutenant Governor under James, Duke of York and Albany, to Philip Welles, on the 1st Day of December, 1680 (5 Patents 4). On the 22d day of August, 1682, Governor Andros was succeeded by Colonel Thomas Dongan, of Castletown, near Dublin, Ireland, who appointed Phillip Welles survey general in 1683, and as one of the commissioners to settle the boundary between the province of New York and the colony of Connecticut in 1684. Philip Welles seems to have been sheriff of "Yorkshire" in 1675 (N. Y. Civil List (1886) pp. 175, 235, 467). Charles II. died February 6th, 1685, when the Duke of York and Albany became King James II. of England. On the following feast of St. Patrick, Governor Dongan granted to Philip Welles a confirmatory patent for the land he had received from Governor Andros (5 Pat. 319).

Philip Welles sold this land to Denys Denysen, from whom it seemed to have descended to Jacques Denisson, for the latter, on November 1st, 1720, conveyed it to Abraham Van Tuyl, for £550.00. (C. 239).

Abraham Van Tuyl died and his will was proved, 29th September, 1735. (Wills 12,366 N. Y.) The first bequest of the testator is to his son Denis, of the "Great Dutch Bible" and "the silver Tankard", "as in full to his Pretence as being my heir at law to my estate." It contains also this clause: "Item, I give unto my three sons Denis, Johannes and Abraham, all my Real Estate equally to be divided among them, and I will that Denis

shall have his choice of the one third part of my Land whereon I now live." The will mentions another son, Otto, probably the same who subsequently spoke disrespectfully and contumeliously of the King's Council, to Mr. Solomon Comes, in what seems to have been the earliest of Staten Island's ferry wars. (Minutes of Council, 29 Sept., 1749, D. 74.) The will names three daughters, Gertrug, Helena and Leentje, and the testator's wife, Femmetje.

The farm was divided into three longitudinal lots, of which Abraham Van Tuyl 2nd, took the middle one; he died and his will was proved January 30th, 1750, (17 Wills 304, N. Y.). The executors named in his will, pursuant to a power therein contained, sold this middle strip to Wilhelmus Vreeland, of Bergen, New Jersey.

Wilhelmus Vreeland made his will and died. "In the name of God, Amen. I, Wilhelmus Vreeland of Castletown, in the County of Richmond and State of New York, yeoman, tho' enjoying the perfect use and exercise of my mental faculties, as a sound mind, Memory and understanding, yet, being apprehensive from my diseased state of body, and alarming symptoms of the Disorder with which I am afflicted, that my dissolution is fast approaching and being, moreover, deeply impressed with the Necessity and importance of the injunction to set our house in order before we die, do in the most solemn manner, and in strict conformity with my present desire, direct and order that the subsequent clauses be considered, regarded and observed as my last Will and Testament. Previous to the disposal of my worldly property it behooves me to invoke the divine Benediction, and surrender into the hands of Almighty God my immortal Spirit, whenever in the course of his all wise and unerring Providence, he shall be pleased to summon it thence; beseeching his gracious acceptance thereof, only for the righteousness sake of the blessed Redeemer. My body, I request, may be committed to the earth, in a decent and

christian like manner, as my executors shall be pleased to direct." (A of Wills 73, Dated 10 Sept. 1798, Proved 27 Sept. 1798).

Then follow various clauses directing the getting in of assets, payment of debts *et cetera*, and this clause, apparently relating to the subject of our inquiry:

"Item, I order and direct, that as soon as possible after my decease and interment, a just and equal division of the Farm on the Shore, which I purchased of Philip Welles Patent, be made; that the partition line extend from the Shore to the rear of the said Lot; that an equal Quantity of Acres be included in each part; and that the division be so made, on the aforesaid principles, as shall be agreeable to my two sons Eder and William, to whom the same is hereinafter devised; but should they disagree respecting the said division, it shall then, and in such case, be made by judicious and disinterested Men, each whereof to choose one, and those two a third, if necessary, and * * * * *

Item, * * * * I give and devise unto my said son Eder, and to his heirs and assigns forever, the Western moiety or equal half part of the Farm which I purchased from Philip Welles Patent, and which I at present reside on, together with all the Buildings Improvements and Appurtenances thereunto belonging, to be ceded to him, in the manner the said Farm shall be divided, pursuant to the directions hereinbefore contained. * *

Item, I give and devise unto my son William Vreeland, and to his Heirs and Assigns forever, the one full moiety or equal half part of that Farm or Plantation I purchased of Philip Welles Patent, which shall lie on the East side of the partition Line hereinbefore directed to be made, together with all the Buildings Improvements and Appurtenances thereunto belonging, to be delivered into his possession, immediately after my Wifes decease, and not previous thereto * * * *

It seems fair to infer that the boulders in the line first mentioned were set either as boundary monuments, or as foundation stones of a division wall between the

lands of Eder and William Vreeland in pursuance of the provisions of their father's will.

Capt Robert D. Wainwright exhibited portions of Indian skeletons, implements and photographs of the skeletons as they appeared when first uncovered, and read the following paper :

RECENT DISCOVERY OF NINE INDIAN SKELETONS AT TOTTEENVILLE.

Since my last report to the Association in connection with excavations at Tottenville, I have been quite successful in exhuming other remains of Indians. All these were found on the estate of Mr. Acker, which is just below that of Mr. Decker, whose property adjoins that of the Billop estate. From the entrance of Mr. Acker's property, and a little to the left, is a raised eminence, which extends to his residence on the left and to the bluff beyond. Noticing that oyster shells were very plentiful on this ridge, and in some places forming circles, I dug at one of these about the latter part of last month.

Passing through a thin layer of shells I came to disturbed earth, where two and a half feet down I unearthed five skeletons. These were in very bad condition, and in nearly every instance many parts were missing. Two skulls were mashed perfectly flat; the teeth of one being a long distance from the head. Judging from the teeth, the remains consisted of two adults and three young persons. The head of one of the latter was found under the pelvis of one of the adults. These bodies were evidently jammed into the hole, which was a small one, and not regularly buried. There was nothing to show the cause of death. Underneath the remains were burnt shells and charcoal, and mixed with the bodies were shells and a few small pieces of pottery. No other objects were found.

A short distance away, on the same ridge, Mr. Acker unearthed another skeleton. This one was found the same distance down, and the same material (shells, etc.) were encountered as in the excavation of the ones previously mentioned. This

skeleton was one of very large size. It lay on its right side, face facing north-west, knees drawn up and hands in front of face. The skull had been evidently beaten in, on its left side, which no doubt was the cause of death. No implements of any kind were found and only a few chippings and some pottery were found with the body, which, though intact, was in a most fragile state. From the appearance of the teeth, which were worn down almost to the quick, I judged the remains were that of a very old man.

On March 30th, two or three yards to the west of the remains of the five skeletons already mentioned, I dug down two feet and a quarter, through one half a foot of shells and disturbed earth, and discovered another skeleton. The remains were those of a middle aged man and were in terrible condition. The skull was intact, but the ribs of the left side were missing, as was also the left arm and the lower parts of both legs. The pelvis was very large. The fingers of both hands were piled in front of and to the left of the skull. At the fracture of the leg bones and at right angles to them, lay a neck of a large glass bottle, while across this and balanced on it, lay a piece of (as I believe) Dutch pottery. These were the only articles found, but they are of interest as indicating communication with the whites, a fact not previously noted by anyone.

On the the 2nd of April, while clearing away the remains of the above mentioned skeleton, I found burnt shells and charcoal. Digging through this, half a foot downward, I discovered an other skeleton, which, though intact, was in a very fragile state and could not be exhumed, except in a very bad condition. The head lay on the left side, face facing north-west and downward. The upper jaw with skull had fallen, the jaw being in rear of the lower one. The left lower leg was badly out of shape, probably at one time broken and not having knitted together properly. No articles were found with these remains.

On the 3rd of April I removed the

remains, and noticing disturbed earth to the right I continued my excavation in that direction and a half a foot further found another skeleton. The remains were in an excellent condition, the skull faced west-north-west and slightly downward. One hand was under the chin and the other lay on the left leg. The lower limbs were drawn up as is usual with remains which seem to be regularly interred. No objects were found with this skeleton except shells and a little pottery, which no doubt, as in other cases, were thrown in after burial.

Mr. Wm. T. Davis presented a series of twenty-six Staten Island views and read the following memorandum in connection with them:

OLD VIEWS OF STATEN ISLAND

The following notice and advertisement appeared in the *Richmond County Gazette* for August 10, 1859:

'Illustrations of the Island. We were delighted, a day or two ago, in looking at a collection of stereoscopic views of the Island. These views are admirably taken, and familiar to every Islander. We have long wanted something of this kind to assure those who do not know anything about our Island, how beautiful and varied its surface is, and what magnificent panoramas are spread out in every direction from our hills. The views we saw contained, among others, the Unitarian Church on the Turnpike, the Sugar-loaf Rock on the Turnpike, Mr. Pendleton's house at New Brighton, Mr. Aspinwall's at Clifton, some exquisite views of New Brighton, Tompkinsville, Stapleton, Clifton, the Narrows, Silver Lake, and others from our hills. We cordially commend Mr. Hoyer's views to our inhabitants. His advertisement is in another part of today's edition.'

"Stereoscopic views of Staten Island. The subscriber begs leave to inform the public that he is now prepared to take stereoscopic views of private residences, gardens, groups, etc., at short notice, and on reasonable terms

He also offers for sale a large collection of stereoscopic pictures of the most prom-

inent views of Staten Island, including views of the ruins of the Quarantine Buildings, at the low price of \$3.50 per dozen. Stereoscope Box at \$3 and \$4 each. Orders left at his residence will be punctually attended to. H. Hoyer, Tompkinsville, Shore Road, cor. Grant street (formerly Planter's Hotel) between the first and second landings."

Upon inquiry it was learned from photographer Loeffler, of Tompkinsville, that he had the negatives taken by Mr. Hoyer in 1859 and 1860, and in accordance with the authority of the Association I have had photographs taken from all of them that represent views of our villages, hills, etc. They consist of three views of the ruins of the Quarantine buildings at Tompkinsville, burned by the citizens in September, 1858; three views of the steamboat Josephine; one view of the steamboat Southfield, that was purchased by the Government and destroyed in the war of the Rebellion; five views of Clifton, some of them showing the neighboring hills; one view of the old and historic Austin house near the Narrows; one of Stapleton and Clifton; one of Tompkinsville; one of Ward's hill, Saint Paul's avenue, etc.; one of Tompkinsville, showing a part of Pavilion Hill, covered with a considerable growth of trees; one of New Brighton village; one of Sugar-loaf rock on the Turnpike and one of a part of Silver Lake. These photographs are particularly interesting as they probably represent the earliest absolutely accurate pictures of portions of the Island. Mr. Hoyer apparently having been the first Staten Island photographer.

Mr. Davis also exhibited living specimens of a male and female *Branchipus* and read the following paper:

BRANCHIPUS SP?

This beautiful crustacean occurred in great abundance in the latter part of March, 1893, in a small pool in the grounds of the Moravian cemetery, where with Mr. Leng I collected some specimens. We only found one or two in a

neighboring pool, the other nearby pools containing none, though they seem to be of the same character as those tenanted. One of the pools was filled in and the other nearly so, by the cemetery authorities, and we did not find *Branchipus* again until this year, when it was ascertained that a small pond near the cemetery contained a few. On the 27th of March—a cold day—they were hidden among the dead leaves at the bottom of the pond. Three were placed in an aquarium and one lived ten or eleven days. In 1893 one was kept in confinement for two weeks. This afternoon only two specimens of *Branchipus* could be found in the small pond and these are exhibited alive and their graceful undulatory motions may be observed. They swim on their backs, paddles uppermost, except occasionally, when they turn over and use the paddles as feet to crawl a little way along the bottom of the jar.

Branchipus may be described as quite timid and quickly shows alarm when a water-net is slowly brought toward it, or other dangerous demonstrations are made.

Mr. Thomas Craig collected *Branchipus* some years ago near the Old Town Road, and Dr. Joseph C. Thompson has reported them this year from what may be the same pool.

The species has not been determined

Mr. Arthur Hollick read the following:

FURTHER NOTES ON THE BARRED OWL
AND RED SHOULDERED HAWK, IN
THE BULL'S HEAD WOODS

At the April meetings of our Association for the years 1891, 1892, 1894, 1895 and 1896, records may be found of a pair of Barred Owls, which each year has had a nest in a certain hollow tree in the Bull's Head woods. This pair of birds has provided us with a set of three eggs in each of the first four years and a set of four in 1896, all of them obtained about the middle of March.

We of course do not know for how long a time the birds used the tree as a nesting place prior to the year 1891, but it is a matter of great interest to maintain the

record if possible for each succeeding year.

On April 4th I visited the tree, and upon tapping it, the bird flew out. I did not examine the nest, my only object being to ascertain whether the tree had again been used for nesting purposes.

On the same date a nest of Red Shouldered Hawks was found, within a few hundred feet of the owl tree, presumably belonging to the same pair of birds which has nested in this woods for the past fifteen years or more. The old bird was flushed from it, but as we have a number of sets of eggs of this species—several from the same locality—it was not disturbed.

Mr. Hollick also read the following review:

RECENT LITERATURE RELATING TO
STATEN ISLAND.

A New Fossil Grass from Staten Island.
Arthur Hollick. Bull. Torrey Bot. Club, xxiv. (Mch. 1897) 122-124; pl. 298.

The name *Phragmites Aquehongensis* is given to certain remains of grasses, occurring in yellow gravel conglomerate, found in the gravel pit on the Fingerboard Road, near Sir Roderick Cameron's place. The specimens upon which the name was founded are the same as those which were shown at the meetings of the Association, Oct. 13, 1894, and Jan. 9, 1897. They were originally thought to belong to some *Equisetum* (See Proc. iv. (1894) 38) but were afterwards determined to be monocotyledonous. (See Proc. vi. (1897) 12) and are finally referred to the genus *Phragmites*, in which a number of similar fossil remains have been included, by Ettingshausen, Heer and other palæobotanists. The specific name is of course coined from "Aquehonga," in order to identify the species with Staten Island.

MISCELLANEOUS MATERIAL EXHIBITED.

Mr. Wm. D. Twiggs exhibited a gun flint, found at Tottenville.

Capt. Wainwright presented fine specimens of lignite, encrusted with nodules of pyrite crystals, from the Kreischer-ville clay beds.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 7.

MAY 8th, 1897.

The regular monthly meeting of the Association was held at the residence of Capt. A. L. King, Clifton. In the absence of the President Capt. King was elected chairman *pro tem*.

Mr. Edgar S. Conklin, Tottenville, was elected an active member.

The following resolution, introduced by Dr. N. L. Britton, was adopted, and the Secretary was instructed to transmit a copy of the same to Governor Black :

Resolved, That the Natural Science Association of Staten Island, being profoundly interested in the establishment of public parks in Richmond County, and having already proposed such establishment, earnestly requests the Governor of the State to approve the bill passed by the last legislature, known as The Silver Lake Park Bill.

Mr. Edward C. Delavan, Jr., read the following communication :

THE FIRST ENGLISH GRANTS OF LAND UPON STATEN ISLAND.

CHARLES THE SECOND, by the grace of God King of England, Scotland, France and Ireland, defender of the faith etc, having on the 23rd day of April 1663 appointed Col. Richard Nicolls, Sir Robert Crane, George Cartwright Esqre. and Samuel Maverick commissioners to visit Massachusetts and to reduce the Dutch in New Netherland into subjection to the English, (1 Colonial Documents 142.) and having duly instructed them to proceed with the execution of their commission, did, by his royal patent, bearing date the 12th day of March, 1664, give and graunt unto his dearest brother James, Duke of Yorke, his heirs and assigns, a vast

domain, including all the land from the west side of Connectecutte River to the East side of De La Ware Bay, together with full and absolute power and authority to correct, punish, Pardon, Govern and Rule all such Subjects of the King, his heirs and successors, as should from time to time adventure themselves into any of the parts or places so granted, (1 Pat. 139.)

The Duke of York lost no time in giving effect to his patent. As Lord High Admiral he directed a fleet of four ships, the Guinea, of thirty-six guns; the Elias, of thirty; the Martin, of sixteen; and the William and Nicholas, of ten, to be detached for service against New Netherland, and about four hundred and fifty regular soldiers, with their officers, were embarked. The command of the expedition was entrusted to Col. Richard Nicolls, one of the commissioners, who was also appointed to be the Duke's deputy governor, after the Dutch possessions should have been reduced. (Brodhead's History of the State of New York, I., 735.)

The fleet sailed in April, 1664; arrived in Boston late in July; remained there nearly a month; sailed thence for New York, passing outside of Long Island, and dropped anchor in Nyack, now Gravesend Bay, in the latter part of August. (Bryant's Hist. of U. S., II., 260)

The first offensive act of the expedition was the capture of a block house on Staten Island. (See Clute's Hist. 254, 255.) On Monday, September 8th, 1664, New Amsterdam was formally surrendered, and the Dutch Governor, Peter Stuyvesant, stumped out of Fort Amsterdam, which the English Governor,

Richard Nicolls, entered and re-named Fort James.

That the various commissioned and warrant officers of the good ship *Elias* were well pleased with the shores and the wooded hills of Aquehonga Manacknong, appears from various ancient documents recorded in the office of the Secretary of the State of New York, at Albany. The first is here given verbatim :

"Colonele Nicolls, his Promise of a Grant to Capt. William Hill.

"Whereas, Capt. William Hill, Commander of his *Maties* Shipp, the *Elias* came wth me into these Parts in his *Maties* Service and hath request'ed of me five hundred Acres of Land in Staten Island, within my Governm^t not Inhabited or Planted, I doe hereby Promise unto the said William Hill five hundred Acres of Land on the South point of the said Island which when Surveyed shall be allotted unto him or his Assignes he or they Planting it wth in the usual time and rendering and paying therefore to his Royall Highness the Duke of Yorke the accustomed Rent of New Plantacons in this Country. In w^{itnesse} whereof I have hereunto set my hand and Seale at ffort James in New Yorke on Manhatans Island this 4th day of October 1664.

Richard Nicolls [Sealed]

"Sealed and delivered in }
the presence of Thomas }
Bredon Math, Nicol's " } (1 Pat. 6)

On the same day a similar promise of three hundred acres adjoining Capt. Hill's, was made to Lieutenant Humphrey Fox of the *Elias*. (1 Pat. 7.) Six days later Governor Nicolls promised and granted, under like conditions, two hundred and fifty acres each to James Coleman, master's mate and master of the *Elias*, and to Andrew Dennis, the purser (1 Pat. 8.), and two hundred acres each to Bradbury Clarke, chirurgion; Nicholas Pengelly, gunner; Thomas Comes, carpenter; Henry Miller, boatswain; Ambrose Winne, captain's steward, and Simon Man and John Hughes, gunner's mates, all of the *Elias*. In each case the land

promised was to be near, or to adjoin, Captain Hill's. (1 Pat. 9)

The *Elias* sailed away with her officers and crew; none of the promisees named seems ever to have returned to perform the condition of planting his land. Their rights were regarded as waived or forfeited, as the same land was granted by subsequent governors to actual or constructive settlers.

It may be added that the rent of new plantations on Staten Island was subsequently fixed at one bushel of good winter wheat for each eighty acres. (3 Col. Doc. 304, 310.)

Mr. Thomas Craig read the following:

AN APPARENTLY NEW ROTIFER.

In some water from one of the ponds near Four Corners I found a rotifer that is different from any I had previously seen and does not appear to be described in the very perfect monograph of the Rotifera by Hudson and Gosse, nor have I seen it elsewhere mentioned. The peculiarity of it is in the fact that it is enclosed in a case made of grains of sand and small diatoms, somewhat similar to the cases made by some of the caddis larva, but so far different that in this case the particles of sand and diatoms are apparently attached to the skin of the rotifer and it has not the power of leaving it.

It was difficult to get a good view of the animal, but from a prolonged examination on two successive nights I am satisfied that it belongs to the family Notommatodæ and I think to the genus *Tamphrocampa*. It closely resembles the figures of that genus given by Hudson and Gosse and appears to have similar habits.

Its mode of progress was to extend the front part and then to draw up the back part something after the manner of the measuring caterpillar, but not so actively.

When contracted its head and foot are within the case, but when extended the mouth is downward and is surrounded with a row of very fine short cilia. The toes are of crescent form when extended.

Just back of the cilia are two very

small red eyes; some distance behind the eyes and in front or over the trophi was a large dark colored brain or nervous centre. The trophi was of the forcipate type. The size was about $\frac{1}{100}$ of an inch. I found only one specimen.

MISCELLANEOUS MATERIAL, EXHIBITED.

Mr. Eric T. King presented a photograph of "Ivy Tower," on the old Aspinwall estate at Clifton, soon to be torn down, and the site included in the new system of fortifications.

Dr Britton exhibited a specimen of the Jumping Mouse (*Zapus hudsonius* Zim.) captured by Mr. Cyrus MacVeagh near Richmond. Only one other specimen of this mouse has been recorded from the Island, which was captured by Mr. James Raymond, near the same

locality in 1885 (See Proc. I., 27, Dec. 12th., 1885.).

Mr. Arthur Hollick exhibited specimens of *Lunaria annua* L., collected at Princes Bay, May 1st; an addition to the flora of the Island and only of recent introduction from Europe into America. It has been reported as becoming naturalized in southern Connecticut and eastern Pennsylvania.

Also a ferruginous clay concretion, found in the drift at Princes Bay, containing a small branch of *Moriconia cyclotoxon* Del. and Ett; an addition to the cretaceous fossil flora of the Island,

Also a number of large specimens of the fresh water lobster or Craw Fish (*Astacus fluviatilis*) recently captured in Ketchum's brook, back of Richmond Hill.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 8.

JUNE 12th, 1897.

The regular monthly meeting of the Association was held at the residence of Mr J. B. Hillyer, West New Brighton, with the President in the chair.

The minutes of the regular meeting of May 8th were read and approved.

The minutes of the special meeting of May 19th were read and approved, as follows:

Special meeting, held at the Staten Island Academy, May 19th, 1897.

In the absence of the President, Mr. A. K. Johnston was elected chairman *pro tem*.

The chairman stated that the meeting had been called by the President, at the request of several members, for the purpose of nominating one or more men and presenting their names to the Governor of the State, for appointment on the board of five commissioners, which he is to appoint in conformity with the provisions of the Silver Lake Park Bill, signed by him last Saturday.

On motion the following resolution was adopted:

Resolved. That the Natural Science Association of Staten Island present the name of Arthur Hollick for one of the commissioners to be appointed under Assembly Bill No. 1923 (known as the Silver Lake Park Bill) and that the Association requests his Excellency, Governor Black, to appoint said Arthur Hollick as such commissioner.

S. M. DIX,
Secretary *pro tem*.

The President stated that the foregoing resolution had been favorably received and that Mr. Hollick had been appointed a commissioner.

The Secretary called attention to the

death, since the last meeting, of Captain A. L. King, and gave a brief outline of his connection with the Association.

On motion the following minute was subsequently adopted:

It is with deep regret that we record the death, on June 3rd, at the age of sixty-five, of Captain Adolph L. King, who was elected a member of this Association at its first meeting, on November 12th, 1881, and who was always one of its most loyal supporters.

Although a man of many duties and engrossed with public and private responsibilities, he was ever ready to contribute time and energy in response to the numerous claims upon his attention and his wise counsel was always as freely given as it was sought.

Captain King was a man of broad knowledge and genial nature, which attributes bound him closely to the members of this Association. The service he has rendered by his influence, encouragement and good counsel is preserved within our organization, while his personal loss is profoundly felt by every member.

Mr. E. C. Delavan read the following communication:

THE FIRST ENGLISH GRANTS OF LAND UPON STATEN ISLAND. (Continued.)

Governor Nicolls made two more grants of Staten Island land on October 13, 1664. The first, to Jacques Guyon, a merchant and a Frenchman, of two hundred acres of land "over against the Great Kell," (1 Patents 10) was subsequently made the subject of a survey (1 Land Papers 75) and of a confirmatory patent from Governor Andros (4 Pat. 122.)

The second, to Jacques Baudouen, also a merchant and a Frenchman, of two hundred acres of land upon Staten Island "on that side next to the maine Sea over against the greate Kell," (1 Pat. 10) I

have not further traced.

Captain James Bollen, commissary of ammunition at Fort James, (1 Brod. 49) who had come with the Governor into these parts in his Maties Service, jointly with John Pain, Charles Bollen and other associates, received, on December 24, 1664, a grant of a neck of land upon Staten Island, "beginning at the watering place on the east, to run directly west south west to the other side of the island over against the Navisans, and bounded on the north by Hudsons River and the creek called Kell van Cull, with liberty to acquire Indian or other propriety." This grant seems never to have been in any way availed of or confirmed.

This completes the first group of Governor Nicolls Statén Island grants, or such as were made prior to the general confiscation to the use of the Duke of York of the estate of the Dutch West India Company on Staten Island, in 1665.

A patent granted May 1, 1668, to Hedger and Walton is immediately followed by a confirmatory instrument of the following tenor:

"A confirmation granted to Henry Hedger and Thomas Walton for two Lotts of Land upon Staten Island.

Richard Nicolls Esqre &c Whereas there are foure Lotts of Land upon Staten Island lying and being upon ye Hill to ye East of ye Towne wch said Lotts were heretofore layd out Proportionably wth ye rest of ye Towne Lotts but have layne voyd & undisposed of Now to ye end some good Improvement may be made thereupon Know yea that by vertue of ye Com^{ns} & Authority unto me given by his Royall Highnesse I have given and Graunted & by these presents doe Give Ratifye Confirme & Graunt unto Henry Hedger & Thomas Walton who came over into these Partes wth me in his Maties Service & untill this present tyme have continued undr my command & to their Heires & Assignes two of the aforesaid Lotts of Land that is to say ye two nearest ye Towne the one adjoining to Nathan Whitmores & ye next adjoining to that the front of wh^{ch} sd Lotts lyeth to

ye South & ye Reare to ye North an East and West lyne running athwart them To have and to hould ye aforesaid two Lotts of Land & pr misses togethr wth Equall Proportion of Meadow Ground Range of Cattle & all such other Rights & Priviledges as belonge to ye Rest of ye Towne Lotts unto the said Henry Hedger & Thomas Walton their Heires & Assignes &c The Patent is dated ye 1st May 1668.

I do hereby Certify the foregoing to be a true copy of the original Record Compared therewith by me.

Lewis A. Scott Secretary." (1 Pat. 14.)

Richard Doddiman and John Kingdom also came over with the Governor, and on May 6th 1668 received from him a grant of two lots, "ye one next adjoining to ye East of those two graunted to Henry Hedger & Thomas Walton & in lieu of the other remaining Lott upon ye Hill a Lott to be layd out on ye West syde of ye Towne Proportionable & Equall to ye rest the front of w^{ch} said Lotts lye to ye South & ye Reare to ye North an East and West lyne running athwart them." (3 Pat. 13.)

I have found no grants by Governor Nicolls of land upon Staten Island, save those mentioned.

"Governor Nicolls likewise granted unimproved lands to any that were willing to settle and improve the same, and these first grants were made without any previous survey, or without reciting any certain Boundaries, but only to contain for example 100, 200 or 300 Acres adjoining to such another mans Land or to a certain Hill or River, or Rivulet." (Cadwallader Colden, surveyor general, to Col. Cosby, 1732, 1 Doc. Hist. (Documents Relating to the Colonial History of the State of New York) 249 U. S. A. minutes.

Mr. Wm. T. Davis read the following account of

SOME PROPOSED STATEN ISLAND PARKS.

Undoubtedly the most important proposition for the improvement of Staten Isl-

and, including the establishment of public parks, a matter in which this Association has so long been interested, is to be found in the pamphlet of 114 pages, published in January, 1871, and known as the report of the "Staten Island Improvement Commission." Two parks or commons are suggested in the report, under the heads of the "Eastern Water Preserve and Public Common," and the "Western Water Preserve and Public Common." "It is the commonest experience that men destroy beauty under an idea that they are going to increase it," says the pamphlet, and it contains many other facts and suggestions that may be of use at this time, when the Silver Lake park is to be laid out.

In the Richmond County Mirror for January 20th, 1838, there occurs the following description of the valley of Jersey street brook, from above the present Crescent avenue, to the shore: "Hessian Springs Garden. We are rejoiced to learn that these delightful springs are no longer to be permitted to repose in undeserved and inglorious seclusion. We learn that a company of enterprising gentlemen is about forming to purchase the old Hessian Spring from the New Brighton Association, with the contiguous valley through which its waters find their way to the Kill Van Kuy. It is proposed to lay out the whole valley as a garden, with vine-hung arbors. This enterprise is in better taste than anything we have heard of lately. The celebrated qualities of the Hessian Springs, where whilom our Dutch ancestors were wont to regale their appetites, are too valuable any longer to remain unnoticed. Tall trees bend their cooling shade over the streamlet that leaps from this antiquated source and the hills come sloping in gradually from every direction. Everything seems to have conspired to render this sweet retreat a perfect paradise. This is the first step which we have noticed toward improving the real natural advantages of this place and we hope it may not be lost sight of."

Another proposition that gave rise to considerable discussion in the local press

at the time is mentioned in the Richmond County Gazette for May 28th, 1862.

"The proposed Castleton Park. We have received a very neat pamphlet of twelve pages, printed by Francis and Loutrel, of New York, entitled 'Description of the Quarantine grounds on Staten Island: speech of Hon. Smith Ely, of Richmond, in the Assembly of New York, April 3rd and 4th, 1862.'

"A large number of copies have been printed and circulated, and we presume it has been very extensively read. As, however, there may be some of our readers who will not have the pleasure of its perusal and perhaps not hear of it, we venture to refer to it in our columns.

"A copy of the proposed act is prefixed.-- The first section requires the Commissioners of the land office to convey to the County of Richmond, for the sum of \$4,500, all the interest of the State in the Quarantine Hospital grounds in Castleton.

"The second section directs that such lands, when purchased, shall be held by the County solely for public use as a park and public landings, for the erection of such buildings for County purposes as the Supervisors shall deem expedient, and of public buildings for Castleton.

"The speaker compares the progress of Brooklyn, Flushing, Morrisiana, Newark, Jersey City, Hoboken, Rahway and other places, during the last ten years, with that of Richmond County, and shows that the growth of the latter, which should have been equal or more than equal to the former, has been retarded by the presence of the Quarantine Hospitals. He also states many grievances to which our County has been subjected in consequence of its not attaining the number of population of other places around, so as to entitle us to such a representation as would enable us to protect our rights as against others. He says:

* * * * *

'Sir, shall this great boon be granted, or shall the lands be sold in building lots to be used for grog shops, gambling rooms, concert saloons, and other demoralizing purposes? It is to be hoped that this, the

only opportunity that will ever present itself, of creating a park for the inhabitants of the lower parts of the cities of Brooklyn and New York, as a delightful health-restoring place of recreation in their immediate suburbs, may be speedily improved by the generosity of this House.'

"We make the above extracts for the purpose of calling public attention to the subject, and have not space for more. The matter has an important bearing upon the interests of the county and we should like to see it fully discussed."

MISCELLANEOUS MATERIAL, EXHIBITED.

Mr. Davis exhibited abnormal forms of *Medeola Virginiana* L. and read the following memorandum:

The leaves in the Indian cucumber-root (*Medeola Virginiana* L.), are described as occurring in two whorls, the upper of three to four and the lower of five to nine. This description covers the majority of plants under normal conditions, but at Mariners' Harbor, on a piece of land which had been burned over in the

spring, at least one noteworthy exception to the rule was found. After the fire had burned over the ground the *Medeolas* grew unusually fast, as many plants do after the retarding influence of a fire in late spring. One of the specimens attained the height of twenty-three inches and developed three whorls of leaves; the upper of five, the second of seven and the lowest of two. The upper and second whorls are unusually close in the specimen, being only an inch apart, whereas they are usually separated by from three to five inches. A series of plants has also been collected on the same piece of ground, showing from four to ten leaves in the second whorl.

Mr. Davis also exhibited red Triassic shale, obtained from a well boring on the salt meadow in Northfield, at the Elizabethport ferry. The shale was first struck at a depth of 45 feet.

Mr. Walter C. Kerr exhibited specimens of limonite and green quartz crystals, from recent excavations made on the new grounds of the Country Club at Todd Hill.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 9.

SEPT. 11th, 1897.

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the President Mr. F. W. Skinner was elected chairman *pro tem*.

Mr. Ira K. Morris exhibited an oil portrait of Christopher Billopp, made in 1820; and loaned by Mrs. M. V. Paddock, of St. John, N. B., the great granddaughter of Colonel Billopp. Mr. Morris also contributed the following communication:

POPULAR ERRORS CONCERNING CHRISTOPHER BILLOPP.

During my work on the history of the Island I have discovered a series of errors concerning this noted Staten Islander, and am glad of this opportunity to explain some of them to the Association.

First—Several histories—in fact, all that I have ever read that mentioned his name at all—state positively that Christopher Billopp was appointed a colonel in the British army. This is an error. His highest rank was that of lieutenant-colonel. My first proof is the verbatim copy of the inscription on his tombstone, which is located in the city cemetery at St. John, New Brunswick:

“Sacred to the memory of the Honourable Christopher Billopp, a member of His Majesty’s Council in this Province, whose uncompromising loyalty and distinguished exertions as a Lieutenant-Colonel in the Royal Cause during the American Rebellion, obliged him, at the termination of that contest to abandon, without compensation, his hereditary property on Staten Island, and retire with his family to this colony, wherein he since resided at St. John, universally respected. He died on the 28th day of March, 1827, in the ninetieth year of his age.”

Second—Histories also claim that he commanded a regiment, composed of Staten Islanders. This, also, is untrue. He commanded a battalion, consisting of

four skeleton companies of militia, and I am not quite sure at this writing, that more than two companies were Staten Islanders. I am inclined to believe that one company was from Perth Amboy and another from Elizabeth. The fact that he commanded a battalion only, settles the fact that he was not a colonel. It was quite fashionable, however, at that period for a lieutenant-colonel to command a regiment, while the office of colonel was merely a post of honor, held by a rich and influential citizen, who would “lend dignity and influence to the cause.”

Third—Almost everybody believes that the old Manor of Bentley was confiscated at the close of the Revolution. It is perfectly natural that they should think so because histories and newspapers without number have stated it as a fact. It is untrue.

During the war—just after Colonel Billopp’s release from the Burlington (New Jersey) jail, where he had been a prisoner of war—Colonel Billopp disposed of some parts of his estate. On the 10th of May, 1780, he sold to Joseph Totten a tract of twenty acres, and another of three and a half acres in the Manor of Bentley for £235 currency, and on the 29th of the same month he sold to Benjamin Drake a tract of sixty acres from his estate, for £600 currency. On the first of May, 1781, he and his wife, Jane, conveyed to Samuel Ward, of Richmond County, for £3,730 current money of the city of New York, *the tract opposite Perth Amboy, known as the Manor of Bentley*, “containing three hundred and Seventy-three Acres of Land and Salt Meadow, be the same in quantity more or less, being Bounded Easterly by Land of said Albert Rickman Northerly by the river or sound at Low water mark and westerly and southerly by the Bay at Low Water mark.”

From this tract is reserved sixty feet for a burial place, the headstone of his father, Thomas Farmar Billopp being the centre of such reservation. This pro-

vision was cruelly violated when the property passed into the hands of the late General Aspinwall, who had the bones of several generations removed and the little cemetery thrown into a common field. Such heartlessness should find nothing but condemnation from the lips of every honest American.

The Government, however, did confiscate and sell a portion of the Billopp estate, adjoining the part whereon the historic house stands, which is described as follows:

"Sold to Thomas McFarren, of the city of New York, merchant, for the sum of four thousand six hundred and ninety-five pounds Lawful Money of the said state—All that certain Tract or parcel of Land situate Lying and being in the County of Richmond and Manor of Bentley. *Bounded* Southerly by the Bay or water called Prince's Bay, westerly by the river that runs between the said Land and Amboy Northerly partly by the Land of Jacob Reckhow and partly by the road and Easterly partly by the road and partly by the Bay, Containing Eight hundred and fifty acres and half an acre and which said tract is divided into the several following Farms and Lots of Land—three hundred and seventy-three acres thereof in possession of Samuel Ward—Two hundred Acres in the possession of Albert Ryckman, Fifty-three acres in the possession of John Manuer—Fifty-three acres in the possession of Andrew Prior—Twenty-five acres in the possession of James Churchward, sixty-seven acres and a half acre in the possession of Benjamin Drake—Twenty-three acres and a half acre in the possession of Joseph Totten—Eleven acres and a half acre in the possession of Jacob Reckhow—Together with all the Buildings and Improvements thereon Erected and made Forfeited to and Vested in the People of this state by the Attainer of Christopher Billopp late of the County of Richmond Esquire."

There is reason to believe that Christopher Billopp was compensated by the English Government for the loss of his land on Staten Island, as it is well known that the Loyalists were rewarded for their fidelity. "Colonel Billopp was a leader of men and measures and was at all times in favor with the crown."

Fourth—I have often heard it repeated that Colonel Billopp died a poor, heart-broken man. It is not so. I have the original papers in my possession, kindly loaned me by his descendants in St. John and other parts of Canada, which tell me he was worth at least \$75,000; and that was a large sum of money for one man to own in the early years of the present century. The following is a verbatim copy

of Colonel Billopp's will:

'In the name of God, Amen. I Christopher Billopp, of the City of St. John, in the province of New Brunswick, (being, thank God, in good health and sound mind and memory), do make this my last will and testament in manner following: And, First, I order my just debts and funeral expenses may be paid as soon as possible.

'Item. I give to my daughters, Catherine, Jane, Ann and Mary, each and every one of them, two thousand pounds stock in the capital or joint stock of three per cent. annuities, erected by an act of Parliament of the twenty-fifth year of the reign of his Majesty King George the Second. And I likewise give to each of my daughters, above mentioned, six hundred pounds stock in the Navy five per cent. annuities transferable at the Bank of England.

'Item: I give to my daughter Louise nine hundred and twelve pounds, ten shillings stock in the capital stock and funds of the Governor and company of the Bank of England. I also give my said daughter Louisa five hundred pounds stock in the five per cent. annuities last above mentioned, and I likewise give to my daughter Louisa fifty-four pounds stock in the five per cent. annuities, erected by an act of Parliament of the thirty-fourth year of the reign of His Majesty King George the Third.

'Item. I give to the four children of my late son, Thomas Billopp, viz.: Mary, Lawrence, Frances, John Moore and Thomas Farmar, five hundred pounds stock, in the five per cent. annuities first above mentioned, to be divided among them equally, share and share alike. I also give to my said grandson, Thomas Farmar, my family pictures that I left in New York.

'Item. I give to the four children of my daughter Sarah, viz.: Billopp, Edward, Jasper and Frances, each of them one hundred pounds stock in the five per cent. stock first above mentioned.

'Item. I give to the two daughters of my late daughter Frances, each of them one hundred pounds in the five per cent. annuities first above mentioned.

'Item. I give to William Billopp Robertson and his heirs and assigns forever, my two lots of land on the north side of King's square, in the city of St. John, and province of New Brunswick, known as lots Nos. 318 and 319.

'Item. I give to my daughters, Ann and Mary, all my beds, bedsteads, bedding, with the curtains and furniture of the same, and the window curtains and all the sheeting and table linen, and all my books and every kind of household

goods and furniture which may belong to me at the time of my death. And also my silver plate and plated ware to be equally divided between them. And also the kitchen furniture.

"Item. I give, devise and bequeath to my said daughters, Ann and Mary, and to their heirs and assigns forever, my lots of land on the north side of King's street in the city of Saint John, aforesaid, known as lots Nos. 387 and 388, and the westernmost half of lot No. 386, with all the buildings and improvements thereon, the amount, when they shall sell the same, to be equally divided between them.

"Item. I give to my five daughters, the children of my late wife, Jane, all the remaining part and residue of my estate, to be equally divided among them, share and share alike. And it is my will that the stock herein given to my unmarried children may be transferred to them in their own names as soon after my decease as can be done.

"And lastly, I do hereby nominate, constitute and appoint my sons-in-law, the Honorable John Black, John Wallace, Esquire, and my friend, the Honorable John Robinson, Executors, and my daughters, Ann and Mary, Executrices, of this my last will and testament, with full power to do everything that is necessary to carry the same into full effect, hereby ratifying and confirming this, and cancelling and revoking all or any other will or wills made by me.

"In witness whereof I have hereunto set my hand and seal this twenty-ninth day of August, in the year of our Lord one thousand eight hundred and twenty.

"Signed, sealed, published and declared by the aforesaid Christopher Billopp, to be his last will and testament in the presence of us who have subscribed our names as witnesses thereto at his request, in his presence and in the presence of each other.

CHRISTO'R BILLOPP.

"Ralph M. Jarvis.

"James Kendricks.

"Hugh Johnston, Junior.

"Henry Blakslee.

"This is a Codicil to my last will and testament within written: Whereas, since the making of my said last will and testament the five per cent. annuities stock have been paid off and done away with, and in lieu thereof a new stock created bearing interest at four per cent., transferrable at the Bank of England. And whereas, all the five per cent. stocks of which I was possessed was transferred to the said four per cent. stocks; now, therefore, it is my wish and desire, and I do give and bequeath the said four per cent. stock annuities to the several persons to whom I have within given and bequeathed the said five per cent. stock to become vested and payable in the same proportions as the said five per cent. stock is in and by said will directed. I do cancel and annul the bequest made in my said will to my granddaughter, Frances, daughter of my daughter Frances; and I do give and bequeath the one hundred pounds stock which I intended for her to her sister, Mary E. Robertson, whereby Mary E. is now entitled to two hundred pounds stock.

"In witness whereof I have hereunto set my hand and seal, the twenty-eighth day of November, in the year of our Lord one thousand eight hundred and twenty-two.

CHRISTO'R BILLOPP.

"Signed, sealed and delivered by the said testator as and for a codicil to his last will and testament within written in my presence, who in his presence, and at his request have subscribed my name as witness hereto.

N. PARKER."

MISCELLANEOUS MATERIAL, EXHIBITED.

Dr. Arthur Hollick exhibited mounted specimens of *Hieracium pratense* Tausch. collected in blossom, on Todt Hill, June 20th. This is not only an addition to the flora of the Island but also apparently to the flora of North America. It is an introduced species from Europe and is evidently spreading. Attention was first called to it by Dr. N. L. Britton, before the species had been definitely determined.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 10.

OCT. 9th, 1897.

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton, with the president in the chair.

Capt. A. W. Vogdes, Fort Wadsworth, and Mr. Geo. F. Humphrey, West New Brighton, were elected active members.

Mr. Ira K. Morris contributed the following paper:

THE DELAWARE AQUEHONGA INDIANS.

We are in receipt of news from the Delaware Indian reservation in Kansas, that the Indians there are experiencing a religious revival such as has never before been equalled.

Some of the Delaware Indians of to-day are the direct descendants of the Aquehonga Indians of Staten Island. The Delawares and the Aquehongas were all members of one and the same tribe, those bearing the latter name being delegated to live on "Aquehonga Man-ack-nong," the Staten Island of to-day. At the time of the third and last sale of the Island to the whites, all but a comparatively few of the Aquehongas rejoined the Delawares in New Jersey, and were never again separated from them.

According to the news reports large union camp meetings are being held, and Indians from other tribes go for miles to participate. Delegations are present from the Cherokees, Osages, Otoes and Creeks, and it is estimated that there are at least five thousand Indians present. The Indians from other reservations come in large bands, and are met by delegations from the Delawares. After the head men of the tribes have smoked the pipe of peace together around their camp fires,

the visiting Indians present the Delawares with several fine ponies, to show their appreciation of their kindness and hospitality.

This custom prevails among the Delawares more than with any other tribe known to day. Indian history, so far as Staten Island is concerned, contains many incidents in which is recorded the hospitable acts of our native tribe. Near the junction of Richmond terrace and Bodine street, West New Brighton, was located their favorite spring, around which their peace festivals, harvest moons and treaties were surely held. The final sale of the Island was undoubtedly consummated at that place.

This may account for the selection of the site of the mansion of Governor Dongan. Of all the colonial governors none was on more friendly terms with the Indians, or possessed a greater influence with them than he. His residence, which stood in the center of the block bounded by Richmond Terrace, Bodine, Cedar and Dongan streets, West New Brighton, was directly behind a very high sand hill, on the top of which the Aquehongas buried their dead. Not only tradition, but positive history, establishes the fact that ceremonies of a religious character, crude even though they were, were held on these historic premises, perhaps by the side of the famous old peace spring. And so, we need not wonder to-day, in this enlightened time, that their descendants are "engaged in a religious revival, such as has never before been equalled" among the Indian nations.

According to our information the meetings are being conducted by missionaries,

who are assisted in their work by many Indians themselves. It is interesting to note that when the Indians profess religion they are required to give up many of their native customs. Among those converted is Chief Little John, who has announced that he will secure divorces from four of his five wives. Indeed this custom has prevailed among the natives from the earliest days of civilized history on this continent. Chief Logan, after whom Logan's spring, near Silver Lake was named, is said to have secured divorces from "several of his wives" because he embraced the religion of the Roman Catholic church. There is a tradition to the effect, that after his own conversion, he made it obligatory with those who were in responsibility under him to also embrace the faith.

Roger Williams is said to have been the first white man who exercised an influence over the Aquehonga Indians in the form of a missionary. It was through his personal influence and bravery that one of the most terrible Indian wars on Staten Island was settled, and that peace was re-established between the Dutch settlers and the natives.

Later the Brainards labored with our Indians and made many converts to the Protestant faith. More than once the Aquehongas, when driven from Staten Island by the Mobawks, joined their "relatives" in Monmouth county, New Jersey. The identical communion table around which the Brainards and their Indian converts gathered in those dark days is still preserved in the old Tennent church on Monmouth battle-ground.

It seems perfectly natural that Staten Island should ever take a deep interest in the welfare, spiritual and otherwise, of the Delaware Indians. They were the original owners of these beautiful hills and valleys, and, strange as it may seem, they have yet to-day a claim upon the wooded domains that are fast disappearing. In the final treaty was reserved the right to enter annually and cut and

gather a certain growth of forest trees, "their heirs and assigns forever," or words to that effect.

The last of the native Aquehongas sleep in the old French burying-ground at Green Ridge, unhonored and unwept. But it would seem that the tribe, driven by circumstances thousands of miles from their original hunting grounds, have prospered, financially, spiritually, and I may say socially, far in excess of that of any other of the known eastern tribes. From an intellectual standpoint they are second to none, notwithstanding all that is said and written about the Sioux, Cheyennes, and a few other powerful tribes.

The following paragraph I recently found in the New Orleans *Picayune*: "The little tribe of Delaware Indians, in the Indian territory, the remnant of a once powerful and dominant race in the east, have just come into great luck. In a couple of weeks they will receive \$22,000 in cash, in consequence of a judgment of the Court of Claims at Washington in their favor. And this piece of good fortune is only the continuation of a series of windfalls that have dropped into their pockets during the past five or six years. A little over a year ago they received from the Government nearly a million of dollars in cash, from trust funds lying in the treasury, and shortly before they received other large sums, and these, together with the property they already had, and other big lumps of ready money in hand, will make every man, woman and pappoose of them worth fully \$6,000 per capita."

It is a noteworthy fact that, while the story of the average Indian tribe is one of bloodshed and wrong, the great Delaware tribe was not deprived of one cent of its belongings by the State of New Jersey, the whole of which, together with Staten Island it held with undisputed title. Nor were those native landholders forced to take up their abode in other parts. When at last they decided to turn their backs upon the land of their fathers, and to seek new hunting grounds amid the wild forests of the west, they parted from the white

settlers only as true friends, and a blessing from that day has rested upon both.

I am sure that at no time in the long and interesting history of Staten Island, has the past, no matter how remote, deserved a more earnest and intelligent consideration than now. In the great transformation scenes which are almost daily occurring in our midst on every hand—when old, familiar landmarks are almost daily fading away—when the bold spirit of vandalism, which is too often mistaken for progress, ruthlessly removes and destroys historic relics of priceless value—when all these combine to lower the curtain of oblivion and shut out the recollections of the past, it is time for those who are interested in the preservation of the history and traditions of our Island to awaken and stand guard lest the awakening come too late!

Little, indeed, is there left on Staten Island to tell the story that this was once the home of the Delaware-Aquehonga Indians. Shell-heaps and burial-mounds have everywhere been leveled, and those who performed the unworthy act have passed on into the forgetfulness of oblivion. Following this, the tangible reminders of the Revolution, too, are rapidly going, for strangers' hands, to whom they seem valueless, are laid upon them. Soon, it would seem, the time will come when the scenes and char-

acteristics of Old Staten Island will live alone in history.

RECENT LITERATURE RELATING TO STATEN ISLAND.

Seventeenth Annual Report. U. S. Geol. Surv. Part III. (continued). Mineral Resources of the United States, &c. On p. 866, under "Clay," is a brief reference to the stoneware clays at Kreischerville.

MINOR NOTES AND MEMORANDA.

Mr. Walter C. Kerr exhibited leaves of horse chestnut blighted by the fungus *Uncinula flexuosa* Peck. Nearly every tree in the vicinity has been so affected this year as to attract general attention, on account of the brown and withered appearance of the edges of the leaves. Under the microscope the species was beautifully shown.

Dr. N. L. Britton sent the following communication:

On p. 37, vol. vi. of our Proceedings, I am credited with being the first to call attention to the occurrence of *Hieracium pratense* on Todt Hill. This is incorrect, as the locality was made known to me by Mr. Wm. T. Davis, who discovered it early this season. I merely determined the species.

Mr. A. K. Johnston exhibited a plant of *Salsola*, thought to be *S. kali trogus*, the so-called "Russian Thistle", which has become established at Prince's Bay.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 11.

Nov. 13th, 1897.

The seventeenth annual meeting of the Association was held at the Staten Island Academy, with the President in the chair.

Reports of officers for the past year were read and approved as follows :

Secretary :

No. of active members on roll at date of last annual report.....	85
Since elected.....	16
Resigned.....	3
Deceased.....	2
Dropped from the roll.....	1
Leaving on roll, at date.....	95

Treasurer :

Balance in hand at date of last annual report	\$269.57
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Receipts :

Dues.....	195 00
Sales of Proceedings.....	15 32
	<hr/>
	\$479 89

Disbursements :

Expenses of furnishing museum	235 75
Printing Proceedings and cards	63 35
Postage and stationery.....	34 34
Subscriptions to periodicals....	10 00
	<hr/>
	\$343 44

Balance in hand.....	\$136 45
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Curator :

Additions to collections :

Geology.....	37
Archæology.....	15
Botany.....	6
Zoology.....	2

Additions to the library :

New exchanges effected.....	6
Total No. of publications received as exchanges.....	229
Total No. of titles included in above	53
Total No. of publications obtained by subscription	61
Total No. of titles included in above	3
Total No. of separate donations received.....	28

cases for the collections and library had been completed and placed in position in the room assigned to the Association in the Academy building ; that a preliminary arrangement of the museum as a whole had been adopted and the specimens temporarily arranged in accordance with it and that the room would be open for inspection after the adjournment of the meeting.

Mr. Ernest Flagg, Dongan Hills, was elected an active member.

Messrs. Sanderson Smith and George W. Wright, the oldest living organizers of the Association, were, on motion, made honorary life members.

On motion it was resolved that the regular meetings of the Association during the ensuing year be held on the second Saturday evening of each month except July and August.

The election of officers for the ensuing year was then held, with the following result :

President, Walter C. Kerr; secretary, Arthur Hollick; treasurer, J. Blake Hillyer; curator, Eric T. King; trustee, William T. Davis.

Mr. William T. Davis exhibited specimens and read the following

NOTES ON STATEN ISLAND BUTTERFLIES.

Chrysophanus thoe. A fresh specimen was taken on Karle's Neck, Sept. 12th, 1897. One was caught in the Clove Valley by Mr A. C. Weeks on the 20th of June, 1896, as recorded in the Proceedings for Sept., 1896.

Pieris protodice. A male, collected at Tottenville, July 25th, 1897. This species has been found on the Island in June,

The committee on museum and library reported that since the previous meeting

July, August and September.

Pamphila hobomok has until lately been regarded as a variety of *P. zabulon*. Both species occur on the Island; *hobomok* quite commonly in May and June. *Zabulon* was found at Mariners' Harbor in August last and at Tottenville, by Capt. Wainwright, in August, September and October.

Pamphila metea. An addition to the local list, collected at Tottenville in June, by Capt. Wainwright.

Pamphila fusca. Capt. Wainwright and I collected several of these butterflies in a field near the Billopp house, Tottenville, on the 20th of last June. A single specimen of this southern species was taken some years ago at Sandy Hook, N. J., by Mr. William Beutenmuller.

These additions, with *Pamphila ocola* and *Nisonides icelus*, mentioned in the Proceedings for November, 1896, bring the number of native butterflies up to seventy-seven.

The swallow tail butterfly, *Papilio philenor*, has been observed flying on the Island on the 6th of May, 27th of October and 2nd of November. On the last mentioned date a fresh specimen was seen. It is more common at times between these dates. The appearance of fresh specimens apparently out of season, can be better understood when some of the erratic ways of the species are mentioned. In July, 1896, five *philenor* caterpillars changed to the chrysalis stage in a breeding cage. Three hatched in the latter part of the month. It was observed that the other two were not dead. After some time had elapsed one was opened and found to be in good condition. The box was then put in an attic where the temperature was more nearly that of out of doors. On the 18th of May, 1897, a male emerged from the remaining chrysalis. Under natural conditions this butterfly would at least have been contemporaneous with his nephews and nieces, all of his generation that emerged from the chrysalis state during the previous summer, being dead.

MINOR NOTES.

Dr. Arthur Hollick exhibited specimens of serpentine rock from a well recently bored on the old McAndrew place on Ocean terrace, now owned by Mr. Philip Süs.

Dr. Hollick also stated that the specimen of *Salsola* from Princes Bay, exhibited at the last meeting, had been identified as the common salt marsh species, and not *S. kali tragus*, the Russian thistle.

Mr. Walter C. Kerr exhibited abnormally large oak leaves, (*Quercus velutina* Lam?) presented by Mrs. E. N. Watrous, collected from a tree on the grounds of Mr. William S. Nichols, Clove road. The tree was reported to have uniformly borne leaves of the size of the specimens shown, which measured eighteen inches in length.

Mr. William T. Davis exhibited specimens of *Sphagnum macrophyllum* Bernh. and read the following memorandum:

This bog moss, which is an addition to the local list, was found in the False Pond, Mariners' Harbor, during the past summer, and was identified for me by Mrs. N. L. Britton. It is not at all uncommon in the pond and specimens may be easily obtained. In Dr. Britton's Catalogue of Plants found in New Jersey it is reported from the central and southern portions of the State.

The President then delivered his annual address, as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

With the passing of each year we can observe the tendency to greater stability of our Association. If sixteen years of growth and the hearty support of an enlarging community tend to fixation of characteristics, our organization should feel that at least its generic if not specific features are well determined. Stability, however, is not inconsistent with variation. On the contrary, variation is a function of life. It may be considered the prime evidence of that abundance of life energy which guarantees survival regardless of the changes which result from the resistance of environment. We may

therefore with reason regard our Association as a living organism, whose power to live, vary and persist, resides within itself, and which is practically independent of outside influences, except so far as they tend to mould, favorably or unfavorably, the results of efforts from within. There is an independence in self-strength which is superior to borrowed force. To advance, we must vary with needs and opportunity.

Our available energy has increased, our changes have been rapid, our stability greater, and we are further from the ruts that eventually lead nowhere than ever before. All things live their existence, whether they be individuals or organizations. Their mission must some time be fulfilled and completed, and the future evidences of their previous presence will be what they choose to make them.

This Association has for its mission the recording and preserving of the evidence of what nature bestowed on one small, but richly endowed island, favorably located for all that our ambitions could demand, except that it is eventually doomed to the destructive influences of civilization. It is not because the needs of civilization are necessarily destroyers of nature that the works of creation must be swept away, but rather because the ignorant mind and wanton hand of average man is yet too uncivilized to respect the vested rights of the same nature to which he belongs, while his unappreciative eye will not even selfishly preserve that which his best talent cannot equal.

Thus forest trees disappear, not in judicious moderation, enabling man and nature to live together, but ruthlessly and totally. Native shrubs give way to picket fences, hills are levelled and waste places made of nature's gardens. We can hope for little better in the future, unless, through the recent accession of our Island to the City of New York, the native quality of the present landscape and conformation should be so valued for its future inestimable worth that steps would be taken to reasonably preserve

the natural advantages, yet not estopping the utilizing of the land in a proper manner.

The past and present, however, promise only general devastation. When that shall be complete, and our fourteen-hundred native plants shall have disappeared, some because they are cut away and others because their habitat is no longer habitable; when our birds have flown because they have nowhere to nest, and our vistas are robbed of all that gave them name, the mission of this Association will have practically ended. Its records may possess great value, its collections may be interesting, and even rare. It may, as an organization, long survive the decadence of its opportunities; but its force should be diligently expended while nature is still with us.

The environment of increasing population will directly aid local scientific research by sympathetic approval and support of such effort, while it resists progress by encroachment upon native material. What will eventually result will not be determined by the survival of the fittest, but rather by the survival of the most powerful, which may too late realize that it was less fit than its power to destroy made it seem.

While it may be admitted that posterity has not had opportunity to declare its purposes, it is more pertinent that, as Clifford has said: "The results of things follow, not from their state, but from their tendency", and of the present tendencies about us there can be no doubt.

However, our chief, or at least our immediate mission, concerns that which we still have with us. We cannot be too diligent in our collections, even though much of the material collected is not immediately worked up. The value of personal collections is often underestimated. It matters not in what line one's interest chiefly centers, if only in that, and perhaps kindred lines, collections are started and permitted to grow. In no other way can familiarity with any branch of nature be so quickly developed, and by no other means are so many new things unearthed.

This consideration of the value of collections is especially pertinent to-night, when we open for inspection the Association's collection, arranged in new cases and in a new order. With the accessibility now afforded by systematic arrangement, and the convenience of our location in the Staten Island Academy, the members can make practical use of the collections we have spent sixteen years in gathering, and each actively interested member should feel it a personal duty to reinforce them at every opportunity.

The presence of this Association and its collections in the Staten Island Academy is significant of an identity of interests. Each, in its own sphere, is an exponent of the best intellectual tendencies of our locality, and each has met with that success which is the result and reward of directness of purpose followed uncompromisingly. There is much in which each can aid the other and their symbiotic combination is fortuitous.

Our Proceedings during the past year have covered about the usual range in quantity and variety, though with

somewhat more of historic record than usual. Historical contributions are highly desirable, notwithstanding our primary motive is scientific, and it is hoped that our non-scientific membership will take an increasing interest in maintaining this interesting feature of our rather liberal field. The mass of accumulated material, comprising a fairly complete natural history of our island, remains unpublished, and of the several methods suggested the most practical seems to be its issue in sections, as our means permit. Should no method be immediately provided to issue it all under one cover, no time should be lost in carrying out this plan. Should we this year succeed in bringing out even one section, comprising perhaps our Geology or Botany, our seventeenth year will have added something useful, if not to the world at least to that small part for which we, in the eyes of science, are the sponsor.

On motion the meeting then adjourned and the members proceeded to inspect the new furnishing and arrangement of material in the museum.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 12.

DEC. 11th, 1897.

The regular meeting of the Association was held at the residence of Mr. Fred. F. Hunt, New Brlghton. In the absence of the President Mr. Lester W. Clark was elected chairman *pro tem*.

Messrs. E. B. Clapp, New York ; Chas. P. Benedict, West New Brighton ; Alexander Perry, New Brighton ; and V. J. McQuade, New Brighton, were elected active members.

Mr. L. A. Camacho presented a series of twelve samples of the material passed through in driving a well on the farm of Mr. P. C. Süss, near Castleton Corners, and gave the following notes in regard to them.

A ONE-HUNDRED-AND-FIFTY-FEET WELL IN THE SOAPSTONE.

These specimens are from the well mentioned by Dr. Arthur Hollick at our last meeting. They represent the pulverized rock pumped out at various depths and are designed to show the successive changes met with in the rock in

passing from the surface to the lowest point, viz.:

No. 1.....	0- 18 ft. Drift.....	18 ft.
No. 2.....	18- 38 ft. Weathered soapstone.....	20 ft.
Nos. 3-10.....	38-118 ft. Green soapstone.....	80 ft.
No. 11.....	118-136 ft. Same as last but darker and harder.....	18 ft.
No. 12.....	136-150 ft. Same as last, with some white mineral..	14 ft.
		150 ft.

At this depth a flow of water amounting to fifteen gallons per minute was obtained. The surface elevation is 260 feet above tide level.

Dr. Arthur Hollick, in discussing the facts, remarked that the white mineral encountered at the lowest point was probably marmolite, and that its presence was significant, as it indicated a seam or fracture in the soapstone which would account for water having been struck there. The general character of the soapstone was not any different from that which may be obtained at the surface in several localities, notably on Todt Hill.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 13.

JAN. 8th, 1898.

The regular meeting of the Association was held at the residence of Capt. A. W. Vogdes, Fort Wadsworth, with the President in the Chair.

J. A. Chard, West New Brighton, and Walter L. Clark, Dongan Hills, were elected active members.

Mr. Ira K. Morris read the following paper on:

FORT WADSWORTH AND ITS EARLY HISTORY.

I regret exceedingly that the place of meeting was not brought to my attention sooner, for this is certainly one of the most interesting historical spots on the continent. There can be no question that the first Dutch fort in the country was erected on the heights of this post. It is equally indisputable that the first white settlement on Staten Island was within a few yards of it, for the reason that the people of the little Dutch hamlet of Oude Dorp looked to the fort for constant protection. Three times Oude Dorp was burned by the Indians, and those who evaded massacre took refuge in the little block fort on the hill, until they could make sure their escape.

From the commencement of civilization on this Island there has always been a fort here. The fact is also established that the Dutch here located the first signal station on the North American continent, in the interests of civilization. It is also known that the Aquehonga and Mohawk Indians utilized it for the same purpose. The Indians also had a signal station near the site of Mr. David J. Tysen's residence on Todt Hill, at the highest point of the Island.

During the French and Indian war a

substantial block fort was built here on the ruins of the long deserted Dutch structure, which was occupied during the Revolution by British troops, it being one of the fifteen forts which I have located on the Island for that period. Immediately after the Revolution it appears to have been the ambition of our people to remove everything that reminded them of the great struggle, and they set to work to pull down all the forts, or redoubts, as they were generally called. There are but four still remaining—one just west of the county Court House, two on Fort Hill, and another on Pavilion Hill, at Tompkinsville. About twelve years ago I saw workmen remove the last of another redoubt on Fort Hill, on the heights above St. George.

Immediately on the commencement of the war of 1812, Governor Tompkins took the responsibility upon himself to order improved fortifications at this post, and used his own money to hasten on the work. Two structures, in style of architecture strongly resembling old Castle William, on Governor's Island, were erected, and the State afterward reimbursed the Governor. It was a long time, however, before the matter was finally settled, and even then it was far from satisfactory on the part of the Governor.

During that war these forts were garrisoned by militia, and the commandant was Colonel Richard Conner, of Staten Island. One company was commanded by Captain Ephraim Clark, from Rahway, father of the late venerable Dr. Ephraim Clark, of New Dorp; and another by Captain Benjamin Wood, who at the close of

the war was with his company at Sandy Hook. While serving as officer of the day, he boarded the British vessel which brought the news relative to terms of peace between England and the United States, and consequently he was the first man in America to learn of this great event.

Shortly after the war, it would appear, the authorities imagined we were never going to have any more trouble, and the forts and all that was in them were allowed to pass into almost complete decay. When the Southern Rebellion shook the land, the old forts here were absolutely useless. The property was purchased from the State by the general government, and the post name was changed in honor of the gallant Wadsworth. Then extensive improvements were at once accomplished. A great number of Confederate prisoners were detained here during the war, one of whom is still on the Island. He managed to escape two or three times and was brought back. The last time he took "French leave," however, he was arrested by the civil authorities and committed to the County Alms House. No one was ever able to learn his name. It was discovered incidentally one day that he came from Kentucky, but that was all. They call him "Billy Barlow," and he accepts his alias as all right.

What has happened here since the war—what is going on to-day—is familiar to us all, or at least was familiar up to the time when an order was issued prohibiting visitors on the premises. It may be interesting, however, to listen to the following account of the place, which may be found in the *National Trades' Union*, of New York, for September, 1835:

"A visit to Forts Richmond and Tompkins.

"On the 17th inst. the writer availed himself of a polite invitation, from Commissary General Arcularius, to accompany him and Captain Shaw to inspect the above named forts, located at the Narrows, on Staten Island side. This is a very important and strong military post. There our State expended, about the period of the late war, [1812], upwards of

\$500,000 in erecting breastworks and fortifications. As to the mode and form of the works, whether most scientific, best selected, or adapted to the service of the war, and for harbor defence, the writer will not now speak; his object is mainly to notice the melancholy and dilapidated picture these important and expensive public works now present.

"In the half-moon battery there are 25 thirty-two pounder and 2 twenty-fours. My interesting and talented friend informed us of what, I could hardly realize, that these noble cannons, with but one exception, were fabricated in our own country by a citizen, Ald. Nelson, upwards of forty years ago, the place where, I have forgotten. They have a rough exterior, but are pronounced by him to be excellent guns - and he is the best judge in our service. The carriages must have cost a great sum; by their appearance they are well made, but have been left exposed to the storms, the weather and sprays of the sea until they have sunk to the floor by decay and under the weight of their burthen. The iron work about them is good yet. The floor or platform, on which they are placed has yielded to the destroying elements, and there is nothing now fit for use in or about the works, except the interior of the barracks and a few implements for the service of the gun. There is not a single piece that could be used with effect, if the safety of the city depended upon a single shot!

"When General Arcularius took possession of the office of Commissary General of this State, he found all the ports or embrasures open and had been for years, everything exposed to the storm, the weather, and dashing of the spray—a great quantity of 32 pound shot scattered about the fort rusting and corroding away, inviting pilferers to help themselves, and enough embraced the invitation and bore away many a shot and sold them for old metal. The Commissary General secured the embrasures, gathered upward of 6,000 32 pound shot, (worth at least \$8,000), secured them in the old magazine, and has as far as the means allowed him by the niggard policy of our State, placed the public property thereabouts in a much safer condition. He certainly is a most untiring and faithful public officer; his talents are of the first order, his industry is unceasing; the former will never be appreciated, nor the better rewarded by his government. He receives but the paltry sum of \$700 per annum instead of \$2,500, which his valuable services richly deserve. It is hoped in the name and cause of justice that the attention of our Legislature will be

directed to this subject in an especial manner by the Commander-in-Chief next session. I have obliqued from my subject. The exterior walls of the forts are in a good state of preservation and strength. The General pointed out to us one piece of cannon, whose history is very interesting; part of it runs thus: It formerly held a position in and looked out of old fort Amsterdam, afterward called fort George, on the Battery, at the lower end of this [New York] city. It is a double fortified 32-pounder, and was used by the subjects of George II. The covering and roof of all the fortifications are all well calculated to admonish us of the mutability of all earthly things. Time has, in an unsparing manner, here made manifest his heavy, desolating hand, and rendered perfectly harmless the contrivances of man, that but yester lay seemed to bid defiance to the floating batteries of the world.

"The Commissary General has made a successful effort to restore to usefulness part of the once excellent wharf; so that now steamboats can come along side and effect a landing with any thing (mounted cannon if necessary) very conveniently. Here is the place for the practice of gunnery with field pieces; here it was where the veteran corps did themselves so much credit, as noticed in last week's paper. Their target remains there yet as an example. We refer all commandants of artillery, or any other corps to the Commissary General for further information of the advantages of this place for firings and improvement. He will promptly afford every facility."

Mr. Walter C. Kerr read the following paper on

ACICULAR ICE CRYSTALS ON FERRIC AND OTHER EARTHS,

It has been a matter of common observation that a freezing temperature after moist weather brings out of the earth in our iron ore diggings a peculiar phenomenon in the form of ice crystals, ranging from one to five inches long, standing approximately at right angles to the earth and in such masses as to give a peculiar appearance, which once seen is not easily forgotten. It is as though in a night a piece of bare ground had become overgrown with short ice grass, the blades standing compactly erect. For many years I have noticed this and discussed it with members of this Asso-

ciation and others but have never reached a satisfactory conclusion as to the cause. It is apparent that the particular nature of the earth must be the main cause, for otherwise this phenomenon would be common everywhere. Some of the facts as I have observed them in connection with this display are as follows.

When hard freezing succeeds rain the crystals are very long, fine, and if frozen during wind will be more or less curved, sometimes fantastically shaped, heightening the impression of the imitation of grass.

Close examination of the crystals shows that they range from the size of a cambric needle to about the size of a knitting needle. They are usually bundled together like the fibers of satin spar and readily separate. When a large bundle is broken the fine fibers draw out as in the breaking of very fibrous woods.

The normal position of these crystals is exactly at right angles to the earth from which they are frozen, regardless of the inclination of the surface. In some cases they may be seen standing out horizontally from vertical walls of earth in the iron diggings and even in this unstable position they seem to take no material flexure nor angular droop by gravity.

That the water of which they are composed exudes from the ground under the action of frost is apparent, first from the relative dryness of the earth under them and more especially by the way they sometimes carry the surface upwards, especially if this surface be composed of lumps, pebbles, stones, etc. In one case I saw at the iron mines at Dongan Hills, on November 28th, an area, about ten feet square, where the crystals were from three to five inches long and each square foot was loaded with earth and stones to an estimated weight ranging from five to nearly twenty pounds per square foot.

Again, in many places where there is no appearance of crystals on the surface, the ground having the rusty appearance of limonite earth, it will be found that there is an upper crust several inches thick of normal earth, then from one to

three inches of ice crystals, which only appear by breaking down the crust. This I first noticed in the walk in front of my house, which is topped with iron ore and yellow gravel. I was surprised to find that the surface of the walk yielded about one inch to the tread, which showed that the gravel surface had been raised over an inch by these fine crystals. Examination of the iron ore diggings revealed similar conditions on a much larger scale. The action of frost on moist ferruginous earth seems not to freeze it but rather to cause some contraction at a temperature above freezing, by which water is exuded through the pores and then frozen into fine needles, whose variation in size may depend upon the pores or chinks through which the water exudes or upon the rate of freezing.

On December 19th I found similar crystals formed in the peat bog earth near the small pond in the Moravian cemetery west of the Kunhardt mausoleum. The earth was densely black, with no appearance of iron and the crystals were especially good in the loose earth around an excavation which had recently been made, but they were also quite marked in the undisturbed earth along the borders of the pond. Following the outlet of this pond through the thick undergrowth towards New Dorp these crystals again appeared in various places where there was no appearance of iron. This is the first time I have seen such crystals except in connection with limonite.

The crystals are beautifully clear throughout, being unsoiled by the red iron or black peat and they usually have no definite attachment to the earth from which they exude. They can often be picked up clean with little or no earth adhering and do not emanate from a frozen scale or mass of ice.

While it is apparent, in a way, how these form, it is, on close inspection, not so apparent why they should form. It would seem much easier for congelation to take place in the usual way, resulting in a mere freezing of the earth, than to have the water thus come out and form

this peculiar fibrous coating, leaving the earth comparatively dry and unfrozen underneath. It will be noticed that often the earth under these crystals is comparatively soft and can be worked in the hand as though it were damp sand or mealy clay, though I am not sure that this is universally true. This dry, loose texture is common in the limonite of Dongan Hills.

Where pools of water stand in depressions there seems to be a struggle between the formation of a little ice pond and the segregation of the water into a mass of these crystals. About every stage can be observed from solid ice an inch or more thick to this icy papillae or nap.

I write this general description of what I have observed that it may interest others to ascertain the cause, for such phenomena as surround this peculiar crystalization seem to me more striking than explainable.

MISCELLANEOUS MATERIAL PRESENTED.

Mr. L. W. Freeman presented three arrow heads from the vicinity of Mariners' Harbor. One of the specimens, which was dredged from the waters of Staten Island Sound by Mr. Ellis W. Steinmire, is covered on one face with oyster spats. This specimen represents a broad, barbed type, not common on the Island.

Mr. Arthur Hollick exhibited views of Staten Island scenery taken about sixteen years ago by Mr. B. J. Carroll. One of them represents a natural graft between two beach trees, which was at that time a prominent object in the vicinity of Brittons' ice pond.

Mr. Geo. H. Pepper gave an account of his recent trip through Colorado and New Mexico, under the auspices of the American Museum of Natural History. The object of the journey was to investigate the cliff dwellings of the region. The account was illustrated by a suite of photographs of the Navajo, Ute and Pueblo Indians, their dwellings, scenery in the region, etc.; also samples of textile fabrics, horse trappings, pottery, etc.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 14.

FEB. 12th, 1898.

The regular meeting of the Association was held at the Staten Island Academy, with the President in the chair.

Mr. W. P. Heineken contributed a number of clippings from *Forest and Stream*, in regard to English starlings in the vicinity of New York, and also the following paper on

ENGLISH STARLINGS (*Sturnus vulgaris* Linn.) ON STATEN ISLAND.

The occurrence of these birds on Staten Island has not before been recorded in our Proceedings, although the facts in connection with them have been known for some time past.

They first attracted my attention in November, 1891, when a flock of twenty appeared and made their home in the vicinity of Livingston station. In December following I obtained a male in full plumage, and sent it to the American Museum of Natural History for identification. I was informed that it was probably one of a flock of forty starlings liberated by Mr. Eugene Schieffelin, in Central Park, March, 1890.

A few were also liberated in Prospect Park, Brooklyn, by Col. N. Pike, but I have not been able to ascertain either their number or the date of their liberation.

In the spring of 1892 I lost sight of our birds and at first thought that they had migrated, but in the following August I found a nest in the eaves of the Church of the Ascension, West New Brighton, and during the following winter a flock of about forty appeared again at Livingston and could be seen any evening, about an hour before sunset, perched on the chim-

ney of the then unfinished electric light plant, at the foot of Davis avenue. This chimney they made their roosting place and in the spring of 1893 about six pairs built nests there. Three pairs also built in the dome of the public school on Broadway, West New Brighton. The birds roosted in these places during the following winter, built there in the spring of 1894, and again in 1895.

In January, 1896, there were about twenty birds roosting in the dome of the school building and between thirty and forty in the chimney of the electric light plant, which latter place, however, has not been occupied to the same extent since then, on account of the plant having been put in operation. The birds are still to be seen in the vicinity of Livingston, but I do not know of any other colonies on the Island, although, as they are said to increase nearly as fast as the English sparrow, there either must be more on the Island of which I have not heard, or else some of them must have left us.

The starlings have increased very rapidly around New York. They have been recognized in Prospect Park, Flatbush, Spuyten Duyvil, New Rochelle, Central Park, Oyster Bay and Pelham Bay Park, at which latter locality there are said to be about two hundred at the present time. In all these localities they have appeared in flocks of from ten to fifty, from which it is evident that they are with us to stay and apparently to become a constantly increasing element in our fauna.

They are common in England and over most of Europe, where they are con-

sidered to be of great value to the farmer on account of the insects which they destroy. They build in the hollows of dead trees and the eaves of buildings, in much the same manner as do the English sparrows. They lay an average of six eggs, of a uniform pale blue color.

The starling is a good whistler and also a good eater, and as its food is almost entirely insects, including especially potato bugs and locusts, he ought to be of value on Staten Island.

It is to be hoped that this bird will not become as disastrous to our native birds as the English sparrow, which, as we all know, has succeeded in driving away from the vicinity of dwellings the blue birds, wrens and others, which formerly nestled with us, wherever suitable houses were provided. As yet I have not heard any reports of the starling interfering with other birds.

Mr. Wm. T. Davis exhibited a collection of Staten Island fresh water fishes, preserved in formalin, and read the following:

PRELIMINARY LIST OF THE FRESH WATER FISHES OF STATEN ISLAND

Staten Island, owing to its small size and consequently small water sheds, does not permit of any considerable stream or of a very large fresh water pond. Arnbutus Lake or La Tourette's Pond; Brady's Pond, made on the site of the Haunted Swamp; Van Wagenen's Pond, near the Finger Board Road; Silver Lake or Fresh Pond, and the several artificial ponds of the Clove Valley, are the largest bodies of fresh water on the Island. The largest brook is Palmer's Run, and the longest one is Willow Brook, which has a course of about four miles. On account of these features the Island does not possess a great variety of fresh water fish. There are, however, probably several more, either native or introduced, than are mentioned in the following list.

The Mummichog, and the Sheephead or Variegated Killifish, with one or two others, are found in the brackish creeks, but cannot be considered as truly fresh

waters species.

The names here used are taken from the fifth edition of Jordan's Manual of the Vertebrates and some of the information has been supplied by Mr. James Raymond, of West New Brighton.

Ameiurus nebulosus Catfish, Bull Head, Hornpout. Some years ago catfish of considerable size were caught in Silver Lake.

Catostomus lereus. Common Sucker. In the Clove Valley ponds and in Palmer's Run.

Cyprinus carpio. Carp. Introduced into several of the larger ponds.

Carassius auratus Gold Fish. Introduced and now established in many ponds. In Ipe's and neighboring ponds on the Concord Downs, the bronzed form is very common; some of the gold fish taken there have a more or less developed fan-tail.

Notropis megalops. Common Shiner. In many ponds and brooks and one of the most suitable native fishes for the aquarium.

Rhinichthys atronasmus. Black nosed Dace. Common in the woodland brooks and occasional in ponds.

Semotilus bullaris. Chub, Roach. Reported from Willow Brook by Mr. James Raymond.

Salvelinus fontinalis. Brook Trout. Formerly not uncommon in Clove Valley. About fifteen years ago Mr. L. H. Joutel, of the New York Entomological society, captured small specimens for his aquarium in the brook leading from the Horse-shoe Spring, also at the ice-house near Britton's upper pond.

Fundulus diaphanus. Killifish. This species is common all the year round at Mineral Spring and has also been found in a spring in Clove Valley. Our Staten Island specimens are not usually long lived in the aquarium unless they are given a salt bath now and then.

Umbra limi. Mud Minnow. Has been found in DeHart's Brook and the False Pond, Mariners' Harbor; Brook's Pond, West New Brighton, and in Gotts-

chalk's Pond on the Concord Downs. Speedily tamed when placed in an aquarium and thrives on raw meat.

Esox americanus. Brook Pike. Not uncommon in Betty Holmes' Brook, at Green Ridge.

Esox reticulatus. Pickerel. Not uncommon in the Clove Valley ponds.

Anguilla anguilla. Eel. Large specimens have been caught in the Clove Valley ponds and elsewhere on the Island and small almost transparent individuals may be seen making their way up the brooks from the salt water.

Pygosteus pungitius. Nine spined Stickleback. Some specimens of this fish have been found in New Creek, near South Beach.

Gastrosleus aculeatus. Stickleback. Found in a meadow pool at Watchogue.

Lepomis gibbosus. Sun Fish, Bream. The "Sunnies" of most every pond and pond-hole on the Island.

Micropterus salmoides. Large-mouthed Black Bass. Introduced into Silver Lake and several other ponds.

Perca flavescens. Yellow Perch. It is said that this fish used to occur in some of the artificial ponds in Clove Valley.

Mr. Davis also exhibited specimens and read the following

NOTES ON BEETLES PRESERVED WITH WICKERSHEIMER'S SOLUTION.

Six specimens of native beetles (*Calosoma scrutator*, *Lucanus dama*, *Passalus cornutus*, &c.) were soaked in Wickersheimer's solution in 1884. After thirteen years the beetles remain moderately pliable, particularly the joint between the abdomen and thorax. In most of the specimens the legs can be easily moved, particularly the larger joints, and in some the antennae are also flexible. For the first few years the beetles were kept in a wooden box, but were later transferred to a tin one lined with cork. They have been slightly attacked by *Dermestes*, in spite of the arsenious acid contained in the solution. The pins have not corroded more than in other beetles pinned for the same length of time but not treated with the solution.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. NO. 15.

MARCH 12th, 1898.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Thos. Craig was elected chairman *pro tem*.

Messrs. C. W. Kuepper, New Brighton, and M. Berardini, Rosebank, were elected active members.

The following paper by Mr. J. B. Hillier, condensed from "Holland Documents relating to the Colonial History of the State of New York," John Romeyn Brodhead, agent, E. B. O'Callaghan, M. D., L. L. D., editor, was read by title :

A FEW FACTS FROM THE EARLY HISTORY OF STATEN ISLAND.

Staten Island is first mentioned by name in the royal archives at the Hague in a general scheme of colonization in New Netherlands, for the advancement of the Incorporated West India Company, a scheme which was elaborated and published in 1629, the company reserving to itself all rights and titles in seven particular localities of New Netherlands, of which Staten Island was one. Lords or patroons were given admission to certain places, by them to be designated, with permission to plant colonies and extend them six miles along the coast or on both sides of navigable rivers and as deep inland as they might demand. Staten Island, like Manhattan Island, was bought from the Indians.

One of the first to avail themselves of these privileges granted by the West India Company, was Cornelis Melyn, Patroon of Staten Island, a man of some wealth and much influence. As evidence

of this, he was the leading man of eight who were chosen in 1643 by the Director, William Kieft, and the Council of New Netherlands to appeal to the West India Company for protection from the Indians. Cupidity and familiarity in trading with the red men had caused various differences and ended in an open war, in which Staten Island seems to have suffered, though apparently less than its neighbors, this being partially due to the prompt action of the former Director, Wolter Van Twiller, in punishing the Indians for their earliest depredations upon the Island.

Following this war with the Indians, Patroon Cornelis Melyn and Jochum Pieters Cuyter, in the name of the eight men mentioned above, sent letters to Holland, laying the blame of causing the war upon the then Director, William Kieft, and as a result Melyn became involved in a series of disputes and difficulties with the next Director, Peter Stuyvesant, who sided with Kieft and defended him for the reason that, as he said, if one director's acts should be questioned and complained of by a burgher and hence he should be recalled, his own position might likewise be vacated. By reason of these disputes the further development of the Island was greatly retarded, Melyn and his associate being banished from the country. On appeal to the West India Company, protection was granted to Melyn and permission given him to return to Staten Island and enjoy his property until his appeal was settled. The patroon was continually intimidated by Stuyvesant, and the excessive animosity

of the Director in his persecution of Melyn doubtless was one consideration that led to his recall.

Hendrick van der Capelle tho Ryssel, Lord of Esselt and Hasselt, was inscribed among the nobles of the Duchy of Cleves, was frequently a member of the Dutch States-General, was a man of great influence and twice minister to foreign countries. Becoming interested in Staten Island, in 1650 he planted a colony there, and Melyn, when returning from making his appeal in person to the West India company, embarked upon the vessel which contained the supplies and original colonists, to the number of seventy, sent out by this great man. The vessel and cargo were confiscated and sold by Stuyvesant on a charge of smuggling, under a pretext of fraud which was denied by Melyn. This confiscation seems to have opened the eyes of the Lord of Esselt and Hasselt, who was also a member of the West India Company, to Stuyvesant's treatment of the colonists and to the fact that complaints against him had been made by the Patroon of Staten Island and others, and, while Melyn was Stuyvesant's greatest enemy, had it not been for this unlucky confiscation, it is highly probable that the Director would not so soon have been recalled.

In 1655 the houses and barns on the farms or "bouweries" of Staten Island were entirely destroyed and fifteen of the ninety settlers then living there were killed by the Indians. Van der Capelle applied for permission to build a fort on the Island for protection from the Indians and to prevent a like misfortune recurring. At this time then the first fort or redoubt was built on the south side of the Island for this purpose. Eight years later the Duke of York began to push his settlements into various parts of the Dutch territory under the patent granted to him by King Charles II. The surrender of the New Netherlands followed soon after, Stuyvesant failing to strike a single blow or fire a gun in its defence. The West India Company cited this fort as one of several which might have been

used to advantage for defence against the English, their information leading them to believe that the forts on Manhattan and Staten Islands were but a stone's throw apart, instead of six miles, while they failed to take into consideration the uselessness of a single one-pounder in a stockade, at least two miles from the English ships as they passed up the channel, defended only by ten or twelve soldiers, by no means a match for the fifty regulars on the English vessels.

Mrs. N. L. Britton transmitted the following:

LIST OF MOSSES COLLECTED AT ARLINGTON, STATEN ISLAND, SEPT. 27, 1896.

The specimens listed were collected on the occasion of a field day excursion of the Torrey Botanical Club. The first species mentioned, of which a specimen is enclosed, is an addition to the flora of the Island.

Catharinea crispa James.

Catharinea angustata Brid.

Pogonatum brevicaulis Beauv.

Polytrichum commune Linn.

Ditrichum vaginans (Sulliv.) Lesq. & James.

Philonotis fontana Brid.

Sphagnum acutifolium Ehrh.

MISCELLANEOUS MEMORANDA.

Mr. Arthur Hollick stated that he had accidentally come upon the following item, of interest in connection with Mr. Walter C. Kerr's paper on acicular ice crystals, presented at the January meeting:

At the meeting of the New York Academy of Sciences, June 1st, 1891, (See Trans. N. Y. Acad. Sci. x. (1891) 120) Dr. N. L. Britton referred to "a curious occurrence of vertical, needle-shaped ice crystals, in limonite soil on Staten Island."

The phenomena mentioned by Mr. Kerr are described by Dr. Britton, and the account ends with the words: "It is thought that this phenomenon is due to compression."

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 16.

APRIL 9th, 1898.

An informal meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

Dr. Hollick exhibited geological specimens recently collected on the Island and read the following

GEOLOGICAL NOTES.

I. *Exposure of Cretaceous Material on Fingerboard Road.* In recent grading of the Fingerboard Road, a short distance east of Sand Lane, a mass of white "koalin" and yellow sand was exposed, which is now quite a conspicuous feature of the locality. Ferruginous clay concretions are particularly abundant in the immediate vicinity, many of them containing fragments of vegetation. The locality is just south of the edge of the terminal moraine and the material is undoubtedly Cretaceous and Tertiary in age, similar to that which was exposed in the railroad cut at Arrochar (See Proceedings, iii. 45, June 10, 1893) and in the gravel pit near Sir Roderick Cameron's gate house (See Proceedings, ii. 8, Mch. 14th, 1889.) A large number of the concretions and ferruginous shaly fragments were broken open; a few angiospermous leaf impressions, too fragmentary for determination, were found and finally a well defined specimen of *Moriconia cyclotoxon* Deb. and Etts., a characteristic Cretaceous species of the Amboy clays, was brought to light. This was particularly gratifying inasmuch as the fossil leaves previously found there were too fragmentary for definite identification (See Proceedings, iv. 11, Jan. 13th, 1894.)

II. *Phragmites Aquehongensis* found in place, on Todt Hill. At our meeting of Oct.

13, 1894, (See Proceedings, iv. 37) I exhibited some yellow gravel limonite conglomerate, containing plant remains, found in the gravel pit previously mentioned, where it formed part of the morainal material. I ventured the opinion at the time that it had been derived from limonite deposits on Ocean Terrace and predicted that similar specimens would be found in place on Todt Hill, if careful search was made. I am now able to report that within the past few days a few impressions have been found in ferruginous sandstone, on Todt Hill, on the unglaciated area, which are identical with those from the conglomerate in the gravel pit. The specimens first reported from the latter locality were very meagre and I thought that the plant remains were stems of *Equisetum*. Better specimens subsequently obtained showed them to be fragments of reeds or grasses (See Proceedings, vi. 12, Jan. 9th, 1897) and these were finally described as *Phragmites Aquehongensis* in the Bulletin of the Torrey Botanical Club, xxiv. 122; pl. 298.

III. *Recent finds of fossiliferous Drift boulders.* Several localities on the Island have recently yielded Drift boulders containing fossils. At Princes Bay rocks of Oriskany and Schoharie age were found with *Spirifer cyclopterus* Hall, *Leptocoelia flabellites* Hall, *Stropheodonta inaequiradiata* Hall, *Strophomena rhomboidalis* Conr., *Atrypa reticularis* Hall, and *Cystiphyllum* sp? At Richmond Valley was found a single boulder of Hudson shaly sandstone, containing *Orthis testudinaria* Dalm., and at Arrochar a small piece of Hamilton shale, filled with broken fragments of

brachiopods and trilobites, too imperfect for identification. This is unfortunate as Hamilton fossils are but sparingly represented in our collection and this piece of shale no doubt contains fragments of several species not in our list. The other species mentioned have all been found and recorded on previous occasions.

Dr. Hollick also read the following memorandum on

THE BARRED OWL.

Following the custom of previous years at our April meetings I wish to place on record the fact that the Barred Owls, which have been in the habit of nesting in a certain tree in the Bulls Head wood for the past seven years or more are again occupying the same tree. It was visited on April 3rd and a slight tap on the tree caused the female to fly from it. Further than this the bird or nest was not disturbed.

RECENT LITERATURE RELATING TO STATEN ISLAND

Bull. N. Y. State Museum, Vol. iv, No. 17, (Oct. 1897.) Road Materials and

Road Building in New York. Fred'k J. H. Merrill, Ph. D., Director N. Y. State Museum.

Accompanying this Bulletin are fourteen plates and two maps, the latter designed to show the distribution of the rocks most suitable for road making in the state and the location of quarries. The Graniteville quarry is located on the maps with brief mention on pages 104, 113 and 114.

In discussing the relative values of sandstone, limestone, granite and trap for road material the statement is made (p. 105) that "For high class road building, trap and granite will be preferred and used in all places where their cost is not prohibitory." This should be very gratifying to us on Staten Island.

It is a matter for regret, however, that the views, designed to illustrate modern macadam and telford construction, should have been taken in Massachusetts, when equally good examples were available in New York, on Staten Island.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VI. No. 17.

MAY 14th, 1898.

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton, with the President in the chair.

Mr. George Cromwell, Dongan Hills, was elected an active member.

Mr. Walter C. Kerr gave an account of experiments under way and methods employed in an attempt to mitigate the mosquito nuisance during the coming season, over an extensive area in Middletown and Southfield.

Mr. Thomas Craig read the following notes on

RARE SPECIMENS OF POND LIFE.

I. *Ophrydium versatile*.

While on a general fishing expedition to the fields and woods south of the main road below Richmond, in search of something new, Mr. Fred. F. Hunt and myself obtained from one of the ponds a small globular mass of gelatinous nature, about one quarter of an inch in diameter, that appeared to be *Chaetophora pisiformis* in a state of decay. This is a small plant that grows very plentifully in the streams and ponds of the Island, and is of a brilliant emerald color when young and vigorous.

In the evening, when sampling our catch, as a matter of form we placed the piece of jelly under the microscope and were surprised to find it was a living organism of the Vorticella family. In referring to the books on the subject, we made it out to be *Ophrydium versatile*, but in order to be certain the question was submitted to Dr. Alfred C. Stokes, the great authority on the infusoria in this country, who says :

"From your description it seems pretty

"certain you caught a species of *Ophrydium* and the appearance and habits seem to make it *O. versatile*. I do not think it is common; in the last ten or twelve years I have found but a single specimen. It has been taken from several places in different parts of the country, but never, I think, in any abundance."

Dr. Clements, of Washington, Ind., found a specimen near Baltimore, Md., in 1896.

Saville Kent thus describes the animal :

"Animalcules elongate, subcylindrical, highly contractile, growing in attached or free floating, social clusters, and exuding a common coalescent mucilaginous investing matrix or zoöcytium, within which the bodies are withdrawn at time of contraction."

Our specimen fully answered the above description.

While it is said to be rare, it is quite possible it may be common enough, and may have been overlooked by collectors owing to its resemblance to decaying algae, such as *Chaetophora*, *Nostoe*, *Anabaena* or some of the other similar plants with a mucilaginous matrix.

2. *Chaetophora endivæfolia*.

On the same day we found *Chaetophora endivæfolia* Ag., a plant that does not seem to be common on the Island. This is the first and only time in twelve years that I have found it.

Mr. Arthur Hollick read the following note :

UNION BETWEEN DISSIMILAR TREES

In a recent communication from Mr. Cornelius G. Kolff my attention was called to any apparent union between an oak

and a beech, on the north side of Richmond Turnpike, just east of the Crystal Water Co.'s reservoir. Upon investigating the matter the trees were found to be a white oak and a beech, with the trunks firmly joined together from the ground upward for a distance of three-feet. The junction is mechanically perfect but it is of course not a graft and the line of separation between the two is distinctly marked on account of the difference between the rough bark of the oak and the smooth bark of the beech. A similar union between a white oak and a birch may be seen on the south side of Richmond Turnpike, just west of Cebra Avenue, which was described by Mr. Wm. T. Davis in the Bulletin of the Torrey Botanical Club, xiii. (1886) 221.

In each instance the two trees have every appearance of springing from one trunk at the base.

MISCELLANEOUS MATERIAL PRESENTED.

Mr Wm. T. Davis exhibited a collection of seventy-five indian implements from Mariner's Harbor, presented to the

Association by Mr. Thomas R. Williams. The collection includes a banner stone—an implement not previously represented amongst our specimens.

On motion it was.

Resolved, That a vote of thanks be and is hereby tendered to Mr. Thos. R. Williams for his gift of indian implements to the Association and that the Secretary be instructed to transmit a copy of the same to Mr. Williams.

Mr. Davis also exhibited specimens of the Seventeen-Year Locust, with the information that quite a number of the brood of 1881 were evidently preparing to make their appearance this year, as evidenced by their mud tubes and holes found near Brook's avenue, West New Brighton.

Mr. Arthur Hollick exhibited specimens of *Phacops cristata* Hall, from a drift boulder of Scholarie Grit, at Princes Bay—an addition to our list of fossils found in the Drift.

Mr. Thos. Craig exhibited under the microscope, specimens of *Spirogyra* in conjugation.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VI. No. 18.

JUNE 11th, 1898.

The regular meeting of the Association was held at the residence of Mr. J. B. Hillyer, West New Brighton. In the absence of the president Mr. W. T. Davis was elected chairman *pro tem*.

Mr. Davis read the following:

NOTES ON OUR LOCAL FAUNA.

1. *Blue winged Warbler.*

The Blue-winged warbler (*Helminthophila pinus*) should be included among the birds nesting on the Island, although up to this time the nest has not been reported. The bird, however, is here during breeding time and has been observed in the early summer for a number of years. Any one becoming acquainted with its "swee-chee" note, will soon be convinced of its numbers.

2. *Yellow-throated Vireo.*

The Yellow-throated Vireo (*Vireo flavifrons*) should also be added to the local list of summer residents. In a walk with Mr. Frank M. Chapman, on June 3rd, 1894, the bird was seen and its song heard, and it has been identified at subsequent dates. The Warbling Vireo was reported as nesting on the Island by Mr. Jas. Raymond, in the Proceedings for June, 1887, making, with the White-eyed and Red-eyed, four species of Vireos found here during breeding time.

3. *Fresh-water Killifish.*

In the "Preliminary List of the Fresh Water Fishes of Staten Island," published in the Proceedings for February, 1898, it was stated that a specimen of the Fresh-water Killifish (*Fundulus diaphanus*) had been found in a Clove Valley spring. It has been ascertained that these fish are not uncommon in Schoenian's Pond, though they have not been found thus far in the other Clove Valley ponds. This

fish also occurs in Killifish Brook at Valley Forge and in Simonson's Brook near the Fresh Kills bridge.

4. *Sticklebacks.*

A male stickleback (*Gasterosteus aculeatus*,) was found on the ninth of last April in a pool near Old Place Creek, associated with the spawn and young tadpoles of the Leopard Frog (*Rana virescens*). On May 22nd, Messrs Craig, Hunt and I found young specimens of the Nine-spined Stickleback (*Pygosteus pungitius*,) in a branch of Bedell's Creek at Green Ridge, also associated with what appeared to be the tadpoles of the Leopard Frog.

5. *A Clove Valley Opossum*

About 11 a. m, this morning I came upon an Opossum walking along a wood path in the Clove Valley. He did not hasten his steps when approached, but immediately "played possum". After a time he regained his legs and made off through the woods to his hole, near the margin of Schoenian's Pond. The animal had probably been bitten by a dog, as there was a wound on his side, about which green flies had laid innumerable eggs and were still so engaged, twenty-five or more of them attending him wherever he went. When he retreated to the hole near the pond, some of the flies remained outside.

Notes on the opossum were published in the Proceedings of March, 1892, and June, 1893, recording among other facts the rather sudden appearance of the animal in abundance in 1889 and 1890. They have maintained their numbers to the present time and a list of captures, equaling in length those given in 1892 and 1893, might easily be made.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VI. No. 19.

SEPT. 10th, 1898.

The regular meeting of the Association was held at the residence of Mr. Wm. T. Davis, New Brighton, with the President in the chair.

Mr. Davis read the following account of:

THE SEVENTEEN-YEAR LOCUST ON STATEN ISLAND IN 1898.

In 1881 the Seventeen-Year Cicada appeared on Staten Island in some numbers as recorded in the Proceedings for February 1894. They were of course expected to appear again this year and search was accordingly commenced quite early in the spring, (see Proceedings, May, 1898). On April 30th, two live Cicada pupae were given me by Mr. Chas. W. Leng, whose son found them on the side of the Clove Road, West New Brighton. Later in the day I visited the place and found a cone containing a Cicada pupa. The ground was wet and covered with dead leaves, both being soaked by the recent rains. The cone just protruded above the dead leaves, which extended along the base of a stone wall. Later other cones were found at the same place among the wet leaves, though at a little distance from the wall in the dry open ground along the path, the Cicadas did not construct any cones. By the second week in June the insects were heard singing in the trees in all of the rural parts of the Island visited by me. They were abundant in the Clove Valley, Todt Hill and on Ocean Terrace. On June 12th, I was presented with a box containing one hundred and four Cicada pupae collected in the grounds of Mrs. Mary S. Leng, Clove Road, West New Brighton. Seventeen-year Cicadas, however, always seem to be more numerous

there during "locust year" than at most other places on the Island.

Mr. E. A. Schwarz, in a bulletin published by the Department of Agriculture on the Seventeen-year Cicada, Brood XVII, 1881—1898, says:

"This brood covers a vast area from Wisconsin in the west to New York in the east and along the Alleghany Mountains to North Carolina but the comparatively few localities on record are more widely scattered and isolated from each other than in any other Seventeen-year brood. It seems more than probable that our knowledge of the extent of the brood is very imperfect, so that nothing can be said at present regarding the relation of this brood to other broods." Mr. Louis H. Joutel found a number of Seventeen-year Cicadas on June 5th, at Fort Lee, N. J.

Mr. Davis also contributed the following notes on

THE HICKORY TREE PHYLLOXERA AT WEST NEW BRIGHTON.

A letter was received by this Association in June, from Mr. Read Benedict of West New Brighton, complaining that many hickory trees on his grounds had been killed by depredating insects, and asking that some one be sent to make an examination. The letter was referred to me and the grounds were visited on the 18th of June. Mr. Benedict was not at home, but the gardener showed me two hickory trees, both of them Mockernuts, *Hicoria tomentosa*. The smaller of the two was badly infested by a gall-producing insect, known as *Phylloxera caryocaulis* Fitch. The producers of the galls had in nearly every case departed on the date mentioned, but many had been attacked by

parasites which were still in the galls. The other hickory tree examined was in fine condition and showed no more than the usual amount of injury by insects.

I wrote Mr. Benedict that it was a very difficult matter to say just why one tree should be badly attacked by insects, while its neighbor of the same species remained almost untouched, and that while in the early season it would have been possible with much labor to remove and burn the galls from the small tree, yet after the gall insects had departed it would be the worst thing to do, for their parasites only would then be destroyed.

Some of the material collected was sent to the Division of Entomology, Department of Agriculture, and Mr. C. L. Marlatt replied as follows: "Referring to the material described in your note to the department, I have to inform you that you are quite correct in your identification of the gall as that of *Phylloxera caryocaulis* Fitch. The white larva found in some of the galls is, with little doubt, a Hymenopterous parasite."

Dr. Arthur Hollick and Mr. Eric T. King contributed the following notes on

RECENT LITERATURE RELATING TO STATEN ISLAND.

The Origin of the Serpentine in the Vicinity of New York. By F. J. H. Merrill. Appendix B. Rept. of the Director of the State Museum. 50th Ann. Rept. of the Regents of the University of the

State of New York for 1896. Albany, 1898. The serpentine of Staten Island is briefly described on pp. 43, 44, but the problem of its origin is not considered by the author as solved, in spite of many observations which have been made in the field and in the laboratory. Apparently he is inclined to believe that the rock is of igneous origin, as he says: "There is frequently present a reticulate structure similar to that which Rosenbusch has described and illustrated as characteristic of serpentine derived from olivine."

Preliminary List of Public Geological and Mineralogical Collections in the United States and Canada. Appendix C. Same Rept.

On p. 62 of this list the Natural Science Association of Staten Island is credited with a collection of 500 palæontological and 200 lithological specimens.

Historic Staten Island. By Rufus Rockwell Wilson. Truth. Aug. 17th and 24th, 1898. The following buildings and places are mentioned in the sketch, which is well illustrated: St. James Hotel, Port Richmond, where Aaron Burr died, the Austin house, Clifton, old fort on top of hill overlooking Richmond village, and the old stone house nearby where the British officers held consultation, St. Andrew's church yard, where some of the British officers are buried, the Black Horse Inn at New Dorp, old Moravian church, New Dorp, the Taylor and Fountain houses, both at New Dorp, and the old Billopp house at Tottenville.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VI. No. 20.

OCT. 8th, 1898.

The regular meeting of the Association was held at the residence of Mr. Lester W. Clark, New Brighton.

In the absence of the President, Mr. Clark was elected chairman, pro tem.

Mr. W. W. Lowery, New Brighton, was elected an active member.

Dr. Arthur Hollick read the following

NOTES ON OUR WATER SUPPLY.

Through the courtesy of Mr. J. B. Newhall, of the Crystal Water Co., I have been furnished with interesting information in regard to wells recently bored at Tottenville. They were started at an elevation of about 40 feet above tide level, just south of the Amboy Road, near Bethel Church. The first boring was with a six inch tube. A water-bearing stratum of sand and gravel was struck at a depth of about 50 feet, which yielded from 25 to 60 gallons per minute. The strata passed through were described as surface soil, sand, and red clay with pebbles—apparently all re-assorted Drift material.

About 50 feet further south two ten inch tubes were driven to the same depth and about the same conditions were met with. The supply of water, however, was not found to be sufficient, and the borings were continued to about 75 feet, at which depth an abundant supply was obtained, in a gravel stratum about six or eight feet thick, below and above which were strata of "hard pan."

The exact nature of the material passed through I could not ascertain, but from the descriptions given it was apparently re-assorted Drift throughout, as no plastic (Cretaceous) clay was encountered.

These facts are of considerable interest geologically, indicating as they do that the Cretaceous strata were extensively eroded south of the moraine at this point

and also that where Cretaceous clays are exposed at or near the surface in this region they probably represent masses which have been torn from their original positions and are not in place.

Mr. Newhall has also furnished some additional evidence that the water supply in our morainal region is of local origin only, by means of records of the rain-fall compared with gaugings of the water in test wells, driven for that purpose in the Clove Valley. The records extended over a number of years and in every instance the water supply in the well tubes was found to vary with the amount of the local rain fall, showing that the former was directly dependent upon the latter.

This was of course to be expected, as everyone who has studied carefully the geological conditions which obtain there has always known that such must be the case. Inasmuch, however, as there still seems to be a popular idea that the source of supply is more or less mysterious and is located somewhere in New Jersey, this definite evidence of its local origin, obtained by those who are directly interested in the matter from an economic standpoint, must go a great way towards eliminating a theory which has persisted in spite of all that has been written to demonstrate its improbability and even absurdity.

As local meteorological records are always of value I append Mr. Newhall's table of rain-fall observations:

Year.	Rain fall.
1891	41.44 inches.
1892	38.90 "
1893	53.01 "
1894	44.17 "
1895	35.73 "
1896	37.99 "
1897	44.27 "

This is an average of 42.21 inches for the seven years ending with last year and is considerably lower than I had previously thought to be the case, according to observations by Mr. Charles Keutgen, whose calculations indicated an average rain fall of about 47 inches.

Dr. Hollick and Mr. Wm. T. Davis contributed the following reviews of

RECENT LITERATURE RELATING TO
STATEN ISLAND.

Artesian Wells in New Jersey. Louis Woolman. Ann. Rept. State Geologist of New Jersey, for 1897, Part iv.

On pp. 286, 287 are records of bored wells at Tottenville and Pleasant Plains, reported by W. R. Osborne. The former were for the Water Supply Co., the latter for private parties. The records are of but little value geologically, as nothing more specific is mentioned, in describing the strata passed through, than "sand," "gravel," "hard pan," etc. The average depth to a water-bearing stratum is stated to be from 28-56 ft, according to the elevation of the surface, but unfortunately the surface elevation is not given in any instance.

On p. 290 is the following record of a well near Castleton Corners, reported by Stotthoff Bros.

"Earth	33 ft.
Hardpan and shale rock . . .	53 "
Soapstone (serpentine) . . .	64 "
	150 "

Water rises to 63 ft. from the surface at 8 gallons per minute."

It is particularly unfortunate that this record is so indefinite as to location and also in regard to "shale rock," as, theoretically, Triassic shale might exist in that vicinity and a definite record of its presence would be of great interest.

Some Features of the Drift on Staten Island, N. Y. Arthur Hollick. Science, Vol. viii. (Oct. 7th, 1898) p. 463.

This a brief abstract of a paper read before the Geological Society of America, at the Boston meeting, last August. It will appear in full in the Bulletin of the Society.

Evidences of Glacial Action in and Around Greater New York. By L. P. Gratacap, assistant curator, Museum of Natural History, Borough of Manhattan. New York Teachers' Monographs. Vol. 1, No. 2. June, 1898.

Considerable mention is made of Staten Island in this article of sixteen pages, particularly in reference to Drift boulders and the terminal moraine at Prince's Bay. This moraine at the light house bluff forms the subject of one of the illustrations, and another represents the Island's largest known boulder, in the field near the Turnpike, which is described as follows: "A very striking and effective boulder may be seen south of the Turnpike road, now traversed by a trolley line running to Silver Lake. This huge monolith of granite measures, in the pyramidal portion exposed above ground, six feet by twelve feet, by eleven and one-half feet, and if fully revealed would probably measure one-quarter more. It contains strings of tourmaline crystals."

We note this comment upon some of the lesser erratics: "A stone fence, or stoned gutter or a curb would often tell the observant pedestrian many instructive facts. I recall on Staten Island such a spot, the boulder paved curb and gutter of a pleasant villa on the brow of the hill at Pleasant Plains wherein granite and granitoid gneisses, quartzites, traps, and sandstones mutely proclaimed their foreign extraction. Indeed, looking at this array of 'sermons in stones' the impression of wonder grew as the utterly foreign nature of most of these erratics became more conspicuous by contemplation."

Picturesque Staten Island. By L. P. Gratacap. The Photographic Times. Vol. xxx, No. 7. New York, July, 1898. This article considers the Island from the photographers point of view and contains some picturesque passages, as well as good illustrations. Commenting upon Watchogue, the author says: "The photographer can find character and views here, and he will do best who puts both in his pictures. I well remember the old

woman whose house sat upon a peak of sand, who found this world little else than malaria and mosquitoes with alleviating intervals of quinine and window netting." The illustrations comprise, The Cedars near Richmond, View near Silver Lake, Autumn Scene in Clove Valley, Britton's Pond in Clove Valley and an Old House at Rossville.

MINOR NOTES.

Mr. Davis exhibited the following two

additions to our local list of butterflies :

Pamphila manatqua Scud. Taken by Capt. Wainwright in 1897, probably at Tottenville.

Pamphila viator Edw. Not uncommon on the edge of the salt meadow near Butler's pond, during last July.

The list now includes seventy-nine

species.

PROCEEDINGS

OF THE

Natural Science Association

OF

Staten Island.

VOLUME VII.

November 12, 1898, to October 13, 1900.

EDITED BY ARTHUR HOLLICK, SECRETARY

The price of this and each of the preceding volumes is \$2.50

NEW BRIGHTON, N. Y.,

1900.

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PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 1.

Nov. 12th, 1898.

The eighteenth annual meeting of the Association was held at the Staten Island Academy, with the President in the chair.

Reports of officers for the past year were read and approved, of which the following are abstracts :

Secretary :

No. of members on roll at date of last annual report.....	95
Since elected.....	11
Resigned and dropped.....	15
Leaving at date.....	91

Treasurer :

Balance in hand at date of last annual report.....	\$136.45
Receipts :	
Dues.....	225.00
Subscriptions to and sales of Proceedings	10.10
	<u>\$371.55</u>

Disbursements :

Printing Proceedings, notices of meetings, etc	52.50
Postage.....	36.81
Subscriptions to periodicals and books.....	20.50
Insurance.....	15.00
	<u>\$124.81</u>
Balance in hand.....	\$246.74

Curator :

Additions to the collections :

Archaeology.....	478
Geology.....	22
Botany	6
	<u>506</u>

Additions to the library :

No. of publications received as exchanges (separate parts or numbers)	299
No. of titles included in above.....	69
No. of publications obtained by subscription (separate parts or numbers).....	73
No. of titles included in above.....	4
No. of separate donations.....	9
New exchanges effected.....	3

On motion it was resolved that the regular meetings of the Association dur-

ing the ensuing year be held on the second Saturday evening of each month except July and August

On motion the President was empowered to appoint a committee to arrange for a course of public lectures.

On motion the following preamble and resolutions was passed :

WHEREAS, The Natural Science Association of Staten Island recognizes and has long recognized the great need of the establishment, in the Borough of Richmond, of a system of public parks ; and

WHEREAS, The natural advantages for a system of public parks found within the Borough, whether of hill, valley, glade, meadow, lake or marine scenery, are unsurpassed by those of any equal area in the world ; and

WHEREAS, Land affording these advantages, suitable for park purposes, can be obtained at reasonable prices, and, on account of the increasing population of the Borough, probably never with a smaller expenditure of time, energy and money than at present ; be it

Resolved, That this Association respectfully suggests to the Honorable Commissioner of Parks of the Boroughs of Manhattan and Richmond the consideration of these facts and earnestly requests the said Commissioner to take such action as will, in his judgment, insure an early preliminary study of the matter.

Resolved, That this Association respectfully tenders to said Commissioner such aid as it may be able to give or obtain in furtherance of the object of this presentation.

Resolved, That the President of this Association be and is hereby requested to transmit the foregoing preamble and resolutions to the Hon. Geo C. Clausen, Commissioner of Parks of the Boroughs of Manhattan and Richmond, and a copy of them to the Hon. George Cromwell, President of the Borough of Richmond, together with such explanatory letters as he may deem desirable.

The election of officers for the ensuing

year resulted in the re-election of the former incumbents, as follows :

President, Walter C. Kerr ; secretary, Arthur Hollick ; treasurer, J. Blake Hill-
yer ; curator, Eric T. King ; trustee, Wm.
T. Davis.

Dr. N. L. Britton read the following memorandum :

A BURIED FOREST NEAR GIFFORDS.

In a recent conversation with Mr. John J. Crooke, of Giffords, he gave me his recollection of the discovery of buried logs in the swamp just west of the railroad, at the crossing of the Amboy Road, near Giffords station, where, until a comparatively recent date, there was a conspicuous growth of maple trees. The logs were exposed in an excavation for a drainage ditch about five feet wide ; they were covered with black muck through which a pole could be run to a great depth ; those exposed were not more than four feet below the surface and some of them were fifteen inches in diameter. Mr. Crooke stated that they were "cypress," presumably the white cedar, (*Chamaecyparis thyoides*), a tree which has never been reported as growing on Staten Island.

MISCELLANEOUS MATERIAL PRESENTED.

By Mrs. N. L. Britton. *Acaulon muticum* (Schreb.) C. M. —A moss not previously recorded from the Island. Found at Totenville, Nov. 8th.

By Dr. Arthur Hollick. *Salvinia natan*^s (L.) All., found by Dr. M. A. Howe in Ketchum's pond near Richmond. It was

found in Silver Lake and in a pond near Moravian Cemetery, in 1893, by Mr. Thos. Craig, as reported by him in our Proceedings for Oct. 14th, 1893, but since then no further memorandum in regard to it has been given. In the new locality it was found growing in connection with quantities of *Lemna* and *Riccia* and appeared to be thoroughly at home.

[In a note subsequently received from Mr. Wm. T. Davis he states that he is responsible for the introduction of the plant, having placed some there last Spring.]

By Mr. Eric T. King. Fragments of a Lower Helderberg limestone boulder, containing brachiopods and fragments of trilobites, found near Arrochar.

Dr. Hollick read the following review :

RECENT LITERATURE RELATING TO STATEN ISLAND.

Additions to the Palaeobotany of the Cretaceous Formation on Staten Island. Arthur Hollick. Ann. N. Y. Acad. Sci. Vol. xi. (Sept. 1898.) pp. 415-430 ; pls. xxxvi.-xxxviii.

This paper is supplementary to two previously published in the Transactions of the Academy and is based on material shown at the meetings of this Association from time to time, as noted in the Proceedings during the past few years. The specimens figured are all in our museum. Twenty species are listed, including one new to science, the latter named *Pistacia Aquehogensis*, in reference to its place of discovery.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 2.

DEC. 10th, 1898.

The regular meeting of the Association was held at the residence of Mr. Eric T. King, Arrochar.

In the absence of the President Capt. A. W. Vogdes was elected chairman *pro tem*

Mr. Wm T. Davis read the following

ADDITIONAL MEMORANDA ON THE FIRST SHAD OF SPRING.

In our Proceedings for January 12, 1889, may be found recorded the dates when the first shad of the season were taken in Staten Island waters in the years 1873 to 1888. The earliest dates there recorded are March 28th, 1878, and March 28th, 1880. I have been told by fishermen that in many years shad could probably have been caught earlier than the dates of actual capture, only it did not pay to go shad fishing before they were sure of catching them in some numbers.

The following additional notices in regard to Staten Island shad have been copied from old local newspapers, and it may be noted that March 22nd is the earliest date given.

"Commodore Abraham Simonson, a citizen of Middletown, caught four fine shad on Saturday evening at Robins' Reef, being the first taken in our bay this season"—*Richmond County Gazette*, Wednesday, March 26th, 1862.

"The first shad of the season taken in Staten Island waters was caught last Sunday off Stapleton, by Capt. Stillwell."—*Gazette*, Wednesday, April 1st, 1863.

"The first shad of this season was caught by Mr. David Burgher, yesterday."—*Gazette*, March 28th, 1866.

"The first shad of the season was caught by Messrs. Simonson & Co., in their nets at Robins' Reef, on the 27th of

March."—*Gazette*, April 1st, 1868.

"The first shad of the season was caught by Mr. David Burgher yesterday afternoon, a sure sign that Spring has come. The poles are now being set by Messrs. Stillwell, Simonson and others."—*Gazette*, March 30th, 1870.

"The first shad of the season was captured by Capt. Jas. Stillwell on Sunday, and was presented by Mr. Thos Brown to School Superintendent J. L. Keenan of the 1st district, New York; its subsequent career is not known."

Gazette, Wednesday, April 9th, 1873:

"The first shad of the season was caught in fykes belonging to Capt. J. P. Ketteltas, of South Beach, Friday last." [April 1st.]—*Gazette*, April 6th, 1881.

"William Wardell, of Stapleton, on Saturday, captured the first North River shad of the season, which wandered into his nets in the Narrows. Mr. Wardell took the silvery-sided beauty to Fish Commissioner Blackford, at Fulton market, and received the five dollar gold piece for his luck that always goes to the catcher of the first shad. Mayor Grace had the choice edible presented to him for his Sunday dinner."—*Staten Island Gazette and Sentinel*, Wednesday, April 15th, 1885.

"John Fence, of Stapleton, has the distinction of catching the first shad this season in a drift net in Staten Island waters. He caught three on Thursday afternoon, [April 5th,] and later, making another haul, he captured four."

"Jacob Hoefle was the second lucky man, as he secured several fine shad the following day."—*Richmond County Herald*, April 7th, 1894.

In addition to the blossoming of the "shad

bush" or "shad flower," (*Amelanchier*) which occurs about the middle of April, other signs which indicate the time when the shad appear are the shad flies and the shad frogs. I have made no observations on the flies, but the shad frogs or leopard frogs, as they are quite frequently called, commence holding their conventions in the early part of April, often in the pools on the salt meadows that lie near to the upland. These are very noisy assemblages, and one of the signs quite easy to read in Nature's calendar. I have met with these frog gatherings on Old Place meadow on the 9th, 14th and 16th of April. The wood frog holds its conventions too early to be of much service as a "shad frog."

Dr. Arthur Hollick read the following notes on

RECENT LITERATURE RELATING TO
STATEN ISLAND.

1. *A Catalogue of the Cretaceous and Tertiary Plants of North America.* F. H. Knowlton. Bull. No. 152, U. S. Geol. Surv., pamph. pp. 247 (1898.)

The principal feature of interest and value to us, in this work, is that our local fossil plants all come within its scope and should therefor be included in it. This seems to have been accomplished by the author in every instance, except in the case of *Phragmites Aquehongensis*, which is omitted from the list of names, although curiously enough the title of the

article in which it was described is correctly given in the bibliography which precedes the list. It may also be of interest to note that *Myrica grandifolia* Hollick, from Tottenville, is changed to *Myrica Hollicki* Ward, (See Am. Journ. Sci. Vol. XLV (1893) p. 437), on account of the name originally given having been pre-occupied by a foreign species.

2. *Bibliography and Index of North America Geology, Paleontology, Petrology, and Mineralogy for 1897.* F. B. Weeks. Bull. No. 156, U. S. Geol. Surv., pamph. pp. 130 (1898.)

This work is limited in its scope to publications which appeared during the year 1897, but it is a coincidence that during that year *Phragmites Aquehongensis* was described, and while it was omitted from the work previously noted, it appears in its proper sequence in this index, with correct reference in the bibliography.

MINOR NOTES.

Dr. Hollick also exhibited a specimen of *Potentilla Anserina* L., recently found by Dr. F. Hollick, at Sailor's Snug Harbor. The species was admitted into the original catalogue of Staten Island plants solely on the authority of a specimen contained in the herbarium of the late Dr. Samuel Elliot, and probably collected about thirty-five years ago. Its rediscovery after so long a time is very gratifying.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 3.

JANUARY 14th, 1899.

The regular meeting of the Association was held at the Staten Island Academy, with the President in the chair.

Mr C. S. Snead, New Brighton, was elected an active member.

Mr. Thos. Craig exhibited drawings and read the following memoranda on
SOME RECENT INTERESTING FINDS IN
POND LIFE.

Dictyosphaerium? It is possible that this plant, which I found in Butler's pond last October, may not be new, but it is not figured or described in Wolle's Fresh Water Algae of the United States, and as I have none of the foreign books on the subject I am unable to say whether it is new or not; at any rate it is new to this locality.

It is a small plant, composed of a globe of gelatinous matter in which silvery-looking threads radiate from the centre; the tip of each thread branches into four parts so that the two opposite form a semi-circle, while at the end of each branch is a small green sphere, containing apparently a single chlorophyll plate. The diameter of the cenobium was about one fourhundredth of an inch. I submit a small drawing of the plant.

Amphileptus meleagris Ehr. or *A. Anser* Ehr. The question to be decided is which is it? In December last I had the good fortune to observe, on a *Zoothamnium arbuscula*, an infusorian similar to the description in Kent's Manual of the Infusoria of *Amphileptus meleagris*, with this difference, that the oral extremity had a mouth at the end of a very short proboscis, through which it was absorbing the contents of one of the zooids of the *Zoothamnium*. After feeding the animal roved around for a time and then came back into the colony again.

There were two of them—one died and dissolved—the other, the one I first ob-

served, after some time, developed a proboscis and had all the appearance of *Amphileptus Anser* in figure 40, plate 27, of Kent's Manual.

The inference which I draw from this is that *A. meleagris* Ehr. is only an immature form of *A. Anser* Ehr.

Drawings of each species, copied from Kent's Manual, are submitted.

On motion the meeting then adjourned.

After adjournment the first annual public microscopical exhibition of the Association was held, in connection with the Staten Island Academy.

The President of the Association, Mr. Walter C. Kerr, made the following introductory remarks:

Ladies and Gentlemen:

It is a pleasure to the members of the Natural Science Association to place before those who have accepted the invitation for this evening, some of the things in which a few of us are interested.

There is a great curiosity attending the ability to see whatever is normally concealed from vision and, with due respect to the telescope, the microscope is undoubtedly the most practical instrument with which to enlarge our range. The telescope may have its advantages on some occasions but the microscope and its objects are within reach of all, can be used at all hours and, for ordinary purposes, requires but little skill in manipulation.

The beginnings of the microscope are humble and convenient. I carried a little pocket glass, worth perhaps 25 cents, and magnifying 10 diameters, for fifteen years; then replaced it with this one of much finer quality, magnifying 15 diameters and worth about \$5 00. This I have carried for five years and what I have seen

during the past twenty years with these glasses would fill volumes.

Such glasses are not too insignificant to be called microscopes, even though their limit of power is so small. Their limitations, however, encourage the advance to the compound instruments such as are exhibited here this evening, and which range in value from twenty-five dollars to many hundreds. My reason for mentioning values is that many have an idea that what seems like a great instrument is necessary for microscopic research and their inclination is thus restrained by the apparent complexity and cost. Not only is such a view incorrect but it is even unwise that microscopic work should begin with complex and high-powered instruments. There are so many things to observe that a simple cheap instrument can afford instruction and amusement for a long time and it is only after experience has been gained that it is desirable to go further into this branch of science, which is so inexhaustible as to be a never-ending source of pleasure.

We all know that study is pursued for two purposes; the acquirement of facts and the training of the mind. The use of the microscope is an unusually pleasant combination of the many factors in education, for by it facts are acquired in a pleasurable manner, while the training is of a kind not common to other study because it gives a field of vision beyond that for which nature fitted the eye.

The earliest reference to the use of lenses for the purpose of magnifying was about the year 1300 A. D., though not until about 1600 was anything made that truly constituted a microscope. It is highly probable that the combination of two or more lenses, forming a compound microscope, was invented by Galileo. About 100 years later various forms appeared and by the beginning of this century, or perhaps 1810 to 1820, comparatively high-powered and accurate instruments were produced, magnifying as high as 1,200 diameters.

Such instruments were, however, so rare that only low powers, magnifying

perhaps a few hundred diameters, were accessible to such scientists as used them for practical investigation.

Since that time refinements have been slowly added until now almost any desirable perfection is obtainable. The perfection which has been reached in optical instruments is scarcely known even to those who use them and it is only those interested in the mathematics of the optical qualities who truly appreciate the refinement which skill has attained.

The human eye is usually referred to as a type of optical perfection, but even as long ago as the last century the grinding of lenses had reached such a stage that a prominent astronomer remarked that were the maker to send him a lens which had as many imperfections as the human eye he would return it as defective.

It would be out of place here to undertake a description of the instrument, but it may be of interest to remark that the three prime requirements are magnification, definition and absence of color.

The magnifying power is of course produced by the ability of the lens to make an enlarged image of the object, but if in this enlargement the image is distorted the definition is impaired. The lens must therefore make a true and clear image as well as to magnify it. The magnification being produced by refraction of light is liable to give rise to bands of color such as one sees through a prism and therefore corrections must be introduced in the lenses to counteract his tendency; otherwise the image will be blurred by fringes of color along the edges of all parts of the object. The combinations of lenses which thus prevent the appearance of colors which are not natural to the object are known as achromatic, meaning without color.

Without entering upon technicalities regarding magnification it may be roughly said that a small microscope, like a hand glass, magnifies the image once and the degree of magnification may range from 5 to perhaps 30 diameters, according to the strength of the glass, while the compound microscope magnifies twice; that is, the image is first magnified by the objective lens and this magnified image is again magnified by the eye piece. It will therefore be easily seen that if the objective magnifies 10 diameters and this enlarged image is enlarged 10 diameters by the eye piece the object will appear to the eye magnified 100 diameters.

In compound microscopes, such as you will have an opportunity to see this evening, the low powers may range from 50 to 100 diameters; the moderate powers from 100 to 500 and the high powers from 500 to 2,000, with exceptional lenses, which

are very rare, magnifying up to 5,000 or more.

The difficulties of manipulation rapidly increase with the increase of magnifying power and as the higher powers are reached many auxiliary devices, aside from the lenses, are required, as, for instance, condensers, in order to condense enough light onto a small object so that this light when diffused by the magnification shall still be strong enough to enable the eye to see the magnified image.

Any one wishing further information on such matters may ask any of those who exhibit large microscopes this evening, who will be glad to show and explain such accessories to those who wish to further understand them.

Light is of course the medium by which we see objects, whether with the eye or through instruments, and its rays are so fine, relative to the size of the object, that light may be considered a highly refined medium by which the smallest features are discernable. In fact the rays of light are popularly presumed to be so delicate as to preclude any material thing being more so.

One can, however, easily conceive of how difficult it would be to see the head of a pin by means of ray of light which was an inch or a foot in diameter and when we undertake to use very high powers on a microscope an important limitation arises through the fact that the objects requiring such high power are so small that their size closely approximates those qualities of the light which make it the medium of vision.

In a simple way it may be said that the powers of an optical instrument depend upon the refraction or power of the lens to bend the rays of light. This refractive power also depends upon the wave length of the light, which for ordinary rays is about 1-40,000 or 1-50,000 of an inch. When therefore the object is comparatively small, say 1-100 of an inch, it is yet vastly larger than the wave length and its magnification is not complicated with optical difficulties. When, however, the size of the object is only about 1-40,000 of an inch, as in the striae of various diatoms it is quite as small as the wave length and when less than 1-100,000 of an inch in size it is so much smaller as to be almost impossible to resolve. It is quite doubtful whether what is seen of such almost inconceivably small particles is a true image of their form.

The above is mentioned to illustrate the limitations involved in microscopy rather than with reference to the practical use of the instrument; for nearly all the work is performed under powers of 1,000 diameters or less, while even the investi-

gations of bacteria, of which so much is now heard, are conducted with powers rarely exceeding 1,200 diameters.

The immense variety of unseen life and form brought into vision by the microscope is appalling; for the hundreds of plants and animals visible to the naked eye thousands or even millions exist which are invisible. The ability to investigate them microscopically is even better than the opportunity to study the larger forms with the naked eye.

Not only are living organisms, which are always of peculiar interest, ever ready at hand, but means have been devised for microscopical research into apparently more difficult fields. Thin sections can be made of nearly anything and so mounted that the most delicate structure may be studied. Even rocks are ground so thin as to be transparent, allowing the microscope to determine their constituents. Chemical substances are crystalized in thin films on glass slides so that their peculiar forms may be observed and the surface of opaque objects may be viewed by reflected light.

We cannot now dwell on how material is thus prepared for investigation, but in the slides which are in the instruments this evening you will be able see many of these forms and further details can be gained from those who personally conduct the several exhibits.

It is known to comparatively few that light may be used in another form than that in which it commonly meets the eye. This form is known as polarized. It would be difficult and out of place to here explain the difference between polarized and plain light. A crude analogy, however, would be to say that common light has its rays and vibrations more or less jumbled together in an apparently complicated and unsystematic way, while in polarized light the rays and vibrations are so straightened out as to assume an orderly arrangement.

Perhaps another way of illustrating it by analogy would be to consider water falling in a stream and breaking into drops like rain, representing no particular order. This would represent plain light, but if the water was allowed to flow through several narrow slits it would first appear in thin sheets which when broken into drops would cause these drops to be more symmetrically arranged than if they had merely fallen in a confused mass, and this would typify polarized light.

The polariscope attachment to the microscope, which is shown on some of the instruments here to-night, so modifies the light as to enable certain characteristics of objects to be brought out which are not visible under plain light. Thus

art and science have extended the range of vision beyond that which was intended by nature to come within the scope of the human eye.

A neat extension of microscopical work will be shown to-night by means of a projecting microscope. This should not be confounded with a stereopticon, which throws magnified pictures on the screen. In the case of the projecting microscope no picture or negative is used, but the object itself is placed in the instrument and when you see the image on the screen it is just what you would see if looking down the tube of an ordinary microscope. A large audience is thus enabled to simultaneously view the same image just as if all were looking through one large microscope.

This process while applicable to moderate powers does not possess the clearness of definition of the microscope itself and I would ask that you observe the greater clearness of the objects shown in the instruments than those thrown upon the screen.

It is to be regretted that at exhibitions we can show under the microscopes so few slides. Many of us have hundreds of slides, most of which are interesting, yet on such an evening as this we can select but one slide for each instrument and place it before you. What you see therefore at a microscopical exhibition is but the merest fraction of the exhibit which could be made were it mechanically possible to place our entire collections before you.

Many who have only seen slides under the conditions in which we show them this evening may gain the impression that all objects require mounting in permanent form, while in fact these mounted objects represent the smallest portion of the material which a microscopist passes through his instrument.

Most of the work is done with live matter gathered from the ponds, woods and everywhere; mounted temporarily in water and when viewed is wiped off the slide with no attempt at preservation.

As a rule the greatest interest centers in the observation of living organisms in temporary mounts, but the difficulties of making public exhibition of such objects cause most of the instruments to be shown with permanently mounted objects, while the other class are largely reserved for the private exhibitions which any of those who possess instruments are always pleased to give their friends.

In closing I wish to refer to the hearty cooperation of the Staten Island Academy with the interests of this Association, which is duly appreciated, and also to what I believe to be the wise policy of expansion adopted by the Association,

through which we take pleasure in including the public in the consideration of the many things of nature to which we devote such part of our time as can be allotted to the combining of recreation and the acquirement of knowledge.

The President's remarks were followed by an exhibition of forty-five objects, shown on a screen by means of a projecting microscope, after which there was an exhibition of selected objects under microscopes, as follows:

1. Four microscopes made by Carl Reichert, of Vienna and loaned by Richards & Co., No. 30 E. 18th street, New York, showing:
 - a. Diatoms.
 - b. *Trichina spiralis*
 - c. Teeth of the medicinal leech.
 - d. *Anaspis melanopa*.

2. Living *Nitella*, showing circulation.
3. Arsenious and tartaric acids, mixed. Shown by polarized light.

4. Slide, showing 400 diatoms, with name of each photographed under each specimen.
5. Polycistins from Barbados.

6. Book louse.

Series of four rock sections, each one accompanied by a hand specimen of the rock from which the section was taken; the first three shown under polarized light.

[7-10]

DR. ARTHUR HOLLICK.

7. Fibrolite schist, from Boulevard and 158th street, New York. A metamorphic rock, composed of fibrolite, biotite mica and quartz and containing garnets.
8. Quartz-mica diorite, from Stony Point on the Hudson. An igneous rock composed of triclinic feldspar, mica and quartz.
9. Diabase, from Graniteville, Staten Island. An igneous rock, composed of triclinic feldspar and pyroxene. This is the rock which is extensively quarried at that locality, and used for macadam.
10. Nummulitic limestone from San Domingo. A rock composed almost entirely of the tests of the small marine animal *Nummulites*.

11. Eye of horse fly.
12. Gold crystals, deposited electrically.

13. *Trichina spiralis* from human subject.

14. Section of human scalp, showing hair follicles.

15. Iridescent leaves of a moss (*Octoblepharum albidum*) which grows on palmettos in Florida and tropical America.

MRS. N. L. BRITTON.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 4.

FEBRUARY 11th, 1899.

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton, with the President in the chair.

Mr. A. A. Yates, Mariners' Harbor, was elected an active member.

The committee on public lectures announced that the next one would be by Prof. William Hallock, of Columbia University, on "The Interior Heat of the Earth."

Dr. Arthur Hollick read the following communication :

AN EXAMPLE OF ISOSTASY.

On the west side of the Rapid Transit Railroad, at the Fort Wadsworth station, is an amphitheater-like depression in the moraine, part of which is occupied by the small body of water known as Lily or Lüling's pond and part by a swamp. The general level of this depression is about 75 feet above tide level. A short time ago Mr. Eric T. King called my attention to an interesting instance of ground sinking at the locality, due to filling in for a new roadbed for Tompkins avenue, which there crosses the swamp between the Fingerboard road and the railroad tracks.

On a recent visit I found not only that the new roadbed had sunk, but that the ground on each side had risen and large red maple trees had been thrown out of their original vertical positions so that they are now inclined at various angles, some with their roots more or less exposed. The soil was found to consist of a fair quality of peat, which, after drying, was found to ignite readily and to maintain a steady smouldering fire. Mr. King informed me that the peat has been used

to some extent for fuel and a fire which was kindled to burn off some brushwood started a ground fire which burned for several months.

Wishing to obtain exact data if possible, as to the depth of the peat, character of the underlying deposits, etc., I wrote to Mr. Henry P. Morrison, Deputy Commissioner of the Department of Highways, who kindly furnished me with the following information :

MY DEAR DR. HOLLICK—In reply to your inquiries concerning the sinking of the roadbed of Tompkins avenue, near Fort Wadsworth, permit me to say that the location you refer to is that part of Tompkins avenue, about 550 feet, lying between the Fingerboard road and the S. I. R. T. R. R. tracks at Fort Wadsworth station.

The fill is being made over an old earth road, which supported the traffic that went over it, but quaked and shook if stamped on hard.

Some of the people living in the neighborhood state that the road was built on the site of an old cranberry swamp.

While constructing the improved highway, the fill, having reached a height of from 3 to 4 feet, began to sink and large and deep cracks began to appear. After dumping more material the fill began to settle more rapidly and very unevenly. A section would sink from 2 to 4 feet during a night, while an adjoining section would not sink at all. In one case a section 16 ft. x 30 ft. sank 12 ft. in 36 hours and continued to sink when more earth was dumped there.

The old roadbed was practically level

with the ground on either side, but when earth, to a depth of about 10 feet, was dumped upon it in order to obtain the new grade, the fill sank and banks on each side rose to the new level of the roadway, exposing a rank black vegetable matter resembling peat. In the rising, large trees were lifted and in several cases the roots of these trees were wrenched from the sod in which they were imbedded and are now inclining at a critical angle where the least disturbance will mean their downfall.

Under the old roadbed, about 200 feet from Fingerboard road and about one foot below the surface, was a section of a 12 inch culvert pipe, but since filling in, this pipe is seven feet in the air.

No exact statement of the amount of earth required can be given; the actual fill, if no settling took place, would take about 10,700 cubic yards and in making up the estimate, 15,000 cubic yards more were allowed, making a total of 25,700 cubic yards. About 7,000 cubic yards have already been dumped and the fill is at present sinking about as fast as it is made. Borings made with a 2 inch pipe show a blue clay underlying the peat at a depth varying from 17 to 28 feet at 200 and 250 feet from the Fingerboard road, while at a distance of 300 feet a 1 inch pipe was driven down 33 feet but no bottom reached. The pipe penetrated the ground with very little pressure.

Mr. Rotheroe, engineer in charge of the S. I. R. T. R. R., states that when the railroad company made their fill over this swamp, it sank to a depth of from 8 to 10 feet and spread out to a width of about 150 feet at the surface of the peat.

Respectfully yours,

HENRY P. MORRISON,

From these facts it is evident that a good sized body of water once occupied

the entire depression and that in places it was more than 30 feet in depth. This gradually became silted up from surface drainage and the accumulation of decayed vegetation, until all that now remains of it is represented by Lüling's pond. The overflow was evidently where the railroad station now stands, as may be seen by following around the level of the swamp and pond, and a sluggish stream may be noticed flowing in this direction and doubtless more water gradually seeps away through the spongy peat which apparently fills the outlet. As the new roadbed is practically a dam across this outlet it will surely result in raising the level of the ground water, unless some provision is made for proper drainage. In the meantime it will be interesting to watch and note when a state of isostatic equilibrium is finally attained.

RECENT LITERATURE RELATING TO STATEN ISLAND.

A Guide to the Study of the Geological Collections of the New York State Museum. Fredk. J. H. Merrill. Bull. N. Y. State Museum, Vol. iv., No. 19, (Nov. 1898) pp. 262, pls. 119 and map. This bulletin is practically a popular text book, profusely illustrated, on the geology of the State. Unfortunately none of the illustrations refer to Staten Island, but there are numerous brief references in the text, under both Historic and Economic Geology. On the map the serpentine area of the Island is colored to represent Lower Silurian, in conformity with recently expressed views of the author, but further than this the local references contain nothing of special interest.

MINOR NOTES.

Mr. J. B. Hillyer presented a partial file of the Richmond County Mirror, for the years 1837-38, and read a number of interesting items relating to the Island.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 5.

MARCH 11th, 1899.

An informal meeting of the Association was held at the Staten Island Academy.

The following communication, prepared in accordance with a request made at the last meeting, was presented by Mr. J. B. Hillyer :

EXTRACTS FROM OLD NUMBERS OF THE
RICHMOND COUNTY MIRROR.

As mentioned at our last meeting, through the kindness of Mrs. Abram C. Wood, of West New Brighton, our Association has come into the possession of several copies of the first newspaper printed on Staten Island, the "*Richmond County Mirror*," a paper which began publication on or about August 5th, 1837. The copies donated are :

Vol. I, No. 3,	Sept. 2,	1837.
" I, " 4,	" 16,	"
" I, " 5,	" 30,	"
" I, " 11,	Dec. 23,	"
" I, " —	May 12,	1838.
" II, " 1,	Aug. 4,	"
" II, " 2,	" 11,	" (part)
" II, " 3,	" 18,	"
" II, " 4,	" 25,	"
" II, " 5,	Sept. 1,	"
" II, " 11,	Oct. 13,	"

In looking over these papers of an earlier day and generation the contrasts between them and those of the present time are startling ; not alone the peculiar quarto paper, tough and fine, nor the kind of type, smaller in the body, broader in the titles, simpler and plainer in the headings and head-lines than those most familiar to us, but particularly are we impressed with the choice of matter found between the covers. The editor, Francis L. Hagadorn, of New Brighton, seems to

have been a man of considerable education, of a good literary style, careful in his choice of articles, whether original or selected and withal a keen student of the politics and statesmanship of his times.

Of special interest to Staten Islanders is a wood-cut of the "residence of Geo. A. Ward, Esq., just completed at New Brighton." This is the house on the corner of Richmond Terrace and Franklin avenue, now familiarly known as "The Castle." Mention is made of the composition of which the walls were made as something new, economical and at the same time handsome and ornamental. "This building, 'the editor says,' is a sufficient curiosity to start half the world on a pilgrimage to Staten Island; it is finished throughout in the most chaste and elegant manner, and gives a picturesque character to the neighborhood." This is in Vol. I, No. 3.

Again, in Vol. II, No. 3, appears a wood-cut, this time of the "Front Elevation of the New Brighton Pavilion." The central part consists of two stories with a dome above, connected by a single-story building on either side with a two-storied building, each of the three main buildings being finished in the Greek Temple style a short single-story wing on the right and a much longer similar wing on the left completing the group; quite different from the present building but easily recognizable. In an editorial the building is called the "*chef d'œuvre* of our richly ornamented little island. * * * * The centre building was first projected as the private residence of Thomas E. Davis, Esq. * * * * The colonnade in front of the building is more than two hundred

feet in length. * * * The Pavilion can accommodate between three and four hundred persons."

In Vol. I, No. 4, the "Light House on Robin's Reef" is mentioned as a "work which promises well to be of some importance to our little island, actually to be commenced in a short time." Plaster Busts are said to be a happy invention by Dr. T. Barlow of New York, a phrenologist.

Vol. I, No. 5. "Great Match.—Fiun, the comedian, lately undertook to walk five hundred miles in five hundred consecutive hours, which he affected with ease. This is said to be the greatest performance of the kind on record."

Vol. II, No. 11. "Magnetic Telegraph.—Experiments at two-thirds of a mile have been successfully made and on Tuesday next it is expected that a series of experiments will be made at *ten miles* distance."

Vol. II, No. 11. "Tomato Pies.—The other day we partook for the first time of a tomato pie. * * * The tomatoes are skinned, sliced, and after being mixed with sugar, are prepared in the same manner as other pies. The tomato is likely to become one of the most useful of plants."

The reading matter in these papers includes articles on Natural History, Geology, Educational Statistics, Insectivorous Birds, Curious Method of Catching Wild Pigeons, The Sun-flower, Habitations of Animals, etc., as well as much political and local news and continued articles. The paper is advertised to be sent out of the county only when prepaid. A new road is said to have been "M'Adamed." The Island had at that time from nine to ten thousand inhabitants. The only post offices mentioned are "Cityville, Tompkinsville, Richmond and Port Richmond." West New Brighton always appears as "Factoryville." The fare to New York by boat was "reduced to 12½ cents" and later to 6¼ cents when a rival line was started, one line making four, and the other six trips each way daily. One line advertises "no connection with Quarantine Hospital," recalling the disrepute in which the hospital was held. One "Millard" advertises as a "ship and house carver." Another has a

"Mahogany Yard." "O'Hara's Coffin Warehouse." * * * "P. & E. Cumberston, white and blacksmiths" (a whitesmith was worker in brass—a locksmith of the present day.) * * * "Tuscan and straw hat manufacturers." * * * "Dentist, leeching and cupping." * * * "Attorney and solicitor in chancery." * * * Advertising rates at so much a "square." * * * "Cordials," "bitters," "syrops" and "elixirs" long since out of use. "Manor" is a recognized village name.

MINOR NOTES.

Dr. Arthur Hollick presented two pamphlets, recently found while overhauling an old library, relating to the old Quarantine, viz: "Description and Specification for the Artificial Island Proposed for Quarantine Purposes by the Commissioners of the State of New York," dated New York, Dec 31, 1858, and Assembly Document No. 19, "Communication from His Excellency, the Governor, transmitting papers in relation to Quarantine at the Port of New York," dated Albany, Jan. 11, 1859.

From the first of these we learn that the original plan was to have an island constructed on Orchard Shoal in Raritan Bay. The other consists of twenty letters and official reports, transmitted to the New York State Assembly by Governor King, giving a complete history of the burnings of the quarantine stations, first at Seguine's Point, May 6th, 1857, and subsequently at Tompkinsville, Sept. 1st and 2nd, 1858, with the legal questions involved and ending with the suggestions and preliminary plans and specifications for the construction of an artificial island, as indicated in the pamphlet first mentioned. These pamphlets are supplementary to those relating to the same subject, donated by the late William Olliff and mentioned at our meeting of Dec. 14th, 1895.

Mr. Eric T. King called attention to the dangerous character of the peat bog at Fort Wadsworth station, described at our last meeting. On Monday the 6th inst. Mr. Patrick Quinney was drowned while attempting to cross the low portion of the road. He was evidently caught in the mud and sank, his body remaining submerged until the following Friday.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VII. No. 6.

APRIL 8th, 1899.

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton. In the absence of the President Mr. J. B. Hilleyer was elected chairman *pro tem*.

The following paper by Mr. L. P. Gratacap was read :

THE SIGNIFICANCE OF THE ACCUMULATION AND DISTRIBUTION OF BOWLDERS ON THE NORTH SHORE OF THE ISLAND.

A surface survey and a mere ocular estimate seems to show that the trap bowlders, and indeed bowlders of all sorts are numerically greater on the north shore of Staten Island than through its interior region or south of its hills. The back and flanks of the morainal hillocks do not display so noticeable a collection, nor anywhere is the sprinkling of *la.ge* masses of angular and transported rocks as striking. But on the northern side of the Island there is observable as well a local restriction, and were one to actually count the distribution of bowlders, determining their prevalence per acre, the observer would probably be forced to admit that from West New Brighton to Stapleton, and from the north shore inland for about one mile, the bowlders attain their greatest numerical density. While with still further concentration of attention the hillsides back of New Brighton, to West New Brighton and the adjoining shores, would become pre-eminent as the region where bowlders appear more thickly deposited. Building, railroad construction, fence making, etc., have greatly disarranged and diminished the impressions vividly left in my mind many

years ago, before the present era of metropolitan excitement and development began, but still the contrast to-day seems appreciable between this section and the areas east, west and south of it, as regards their respective boulder populations. These bowlders are for the most part superficial, being on the surface, half imbedded in the underlying earth, or found ten to twenty feet below the surface.

Taken in connection with the admitted lower level of the continent in glacial days they strongly impress the observer as ice-raft or iceberg transported fragments. It is not difficult to imagine that during these long years when, with intermittent advances, the great ice sheet shrunk and receded northward, detached portions, laden with a rocky burden, floated from its crumbling edge and, carried southward, stranded on the half-emergent borders of our islet, then a post glacial shoal, shallow, or reef. The well established course of translation would have been down the valley of the Hudson, or down the more western channels, formed in the Triassic trough, in the present valleys of the Passaic and Hackensack. The bergs or ice-rafts descending by the latter course would have been carried eastward through the preglacial channel of the Kill von Kull, and here colliding with those descending the Hudson, all reaching Staten Island by either avenue, would have stranded on the protuberant point of the Island, now represented by Stapleton on the east to West New Brighton and Mariners' Harbor on the west, and approximately over this arena the greater number of these erratics would

have been dropped.

And in fact the inference that these surface boulders are ice-raft or iceberg pilgrims seems strongly warranted when we consider their sporadic nature. They are not shoved up into hummocks or ramparts; they do not, as a rule, show marks of englacial attrition or other abrasion; they certainly are not ground-moraine enclosures; and if carried on the upper surface of the glacier and dropped by its melting, why should not their prevalence over the whole island to the same extent, as on, what we may now call, "the boulder point," of Staten Island, be equally attested.

The retrospective glance this affords us is not without interest. The icebergs drifting southward, congregating in frigid clusters over our north shore, and these, rocked in the alternating tides of the ocean and the currents from the north, slowly parting with their cargoes of transported trap, granite, and sandstone.

Dr. Arthur Hollick read the following review :

RECENT LITERATURE RELATING TO STATEN ISLAND.

In a paper on "*Prehistoric Art*," etc, by Thos. Wilson, in the *Annual Report of the Smithsonian Institution and U. S. National Museum, for the year ending June 30, 1896*, but only recently issued, is a reference to the Indian stone head in our collection, found near the Fingerboard road and described in our *Proceedings of May 10th, 1884*, which was sent to the Smithsonian Institution some years ago and a cast made from it. The reference is on p. 481 and accompanying it, on Plate 52 the head is figured in profile, in company with that of a similar one found in Monmouth Co., N. J. The Museum catalogue number for our specimen is 98133.

This is the second time that our specimen has been described and figured in the Smithsonian publications. The first time was in the *Annual Report for 1886, Part II. U. S. National Museum*. The description is on p. 101 and the figures on Plate I., representing it both full face and in profile.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. NO. 7.

MAY 13th, 1899.

The regular meeting of the Association was held at the residence of Mr. Alexander Perry, New Brighton.

In the absence of the President Mr. Lester W. Clark was elected chairman *pro tem*.

The Secretary called attention to the recent death of Mr. J. Kadletz, one of the oldest members of the Association, who always took an active and practical interest in its welfare. On motion the Secretary was instructed to record in the minutes an expression of the loss which the Association has sustained in his decease and to transmit to his family a copy of the Proceedings containing it.

Mr. E. C. Delavan read the following paper, illustrated by means of maps and tracings of old and existing property lines:

THE EARLY HISTORY OF ST. ANDREW'S CHURCH YARD.

St. Andrew's Churchyard, an ancient landmark no less interesting than picturesque, lies at the head of the Fresh Kill upon a knoll rising from a cove of reedy meadow. Viewed from the nearby hillside the light green of the calamus against the darker green of the meadow grass is a marked feature of the landscape.

While the churchyard has been somewhat enlarged in comparatively recent years—for I have been informed by Mr. Richard Latourette that a strip of land along the northern edge was given by his uncle, Mr. John J. Crocheron, and that for this purpose the course of the old road was changed—its larger or southwestern portion has probably remained unaltered since William Tilliare and his wife gave

for the purpose of the building of an English Church a portion of the land which Governor Andros had granted by crown patent to James Hubbard thirty-one years before.

Captain James Hubbard, of Kings County, was a surveyor of some eminence (14 Colonial Documents S. N. Y. page 746.) Governor Edmund Andros on December 28th, 1680, granted to him a patent for a tract of land "being at the head of the Fresh Kill on Staten Island, beginning at the Easterly side of a little cove of reedy meadow, extending cross the creek direct North one hundred rodd and from thence direct East two hundred and fifty-six rodd, and from thence due South one hundred rodd and from thence due West two hundred and fifty-six rodd to the said little cove. Containing 160 acres of land with 16 acres of fresh and salt meadow to be laid out where most convenient." (5 Patents 18, Secretary of States Office, Albany) As the unit of grant was 80 acres, this patent covered two lots.

The location of the cove relatively to the body of land so granted is made quite clear by a surveyor's rough draft preserved in the office of the Secretary of State. (1 Land Papers 207.)

Captain Hubbard died prior to May 24, 1697, for on that day James Hubard, of Kings County, on Nassau Island and Province of New York, describing himself as yeoman, and as "Administrator to the Late deceased Captain James Hubbard of the aforesaid county and province, Gentl," conveyed to William Tillyer the Northerly quarter of the two lots described in the patent mentioned, a strip twenty-

five rods in breadth and two hundred and fifty-six rods in length, containing forty acres of upland together with four acres of fresh and salt meadow to be laid out where most convenient and "all the houses, barnes, stables, orchards, gardens, * * * feedings, commons, pastures and meadows to the said forty acres of land belongeth or in any mannour of waies appertaineth" etc. (Liber B, of Conveyances, page 279, Richmond County Clerk's Office.)

We thus learn that this land was settled and cultivated prior to 1697.

While there is no recorded deed from James Hubbard to Elias Hubbard, the latter on December 9th, 1699, conveyed to James Fitcheth, or Fitchett, or Fitch, the remaining three quarters of the two lots in question together with all houses, barns, stables, orchards, and other appurtenances, by a deed which contained a covenant of good right to convey and the execution of which was witnessed by Peter Corteljaun and James Hubbard, (B. 370.)

On December 11th, 1699, James Fitch, and Sara, his wife, conveyed to James Hanse Dye, a parcel of sixty acres of land 75 rods wide and 128 rods long "situated on Staten Island at ye head of ye fresh kill at ye rear of ye Land of the said James Fitch * * * * it being the equall half of ye land which the sd. James Fitch hath bought of Elias Hubbard by deed bearing date the ninth day of Decemb. an. que dom. 1699" and also four acres of meadow. (B. 371b.)

How James Hanse Dye acquired title to the remaining half of the southerly three quarters of the lots in question does not appear, but on March 18th, 170¾ he with Mary, his wife, conveyed the entire three quarters mentioned, containing 120 acres, to Matthew Decker, (B. 478,) for the sum £206.0.0. current money of the Province of New York.

On March 6th, 1707, Matthew Decker and Eve, his wife, in consideration of £100.0.0 current money of the Province of New York, and by deed wherein is recited the patent of Governor Andros to Captain James Hubbard of 28 December, 1680, and the deed made by James Hanse and

Mary, his wife, to Matthew Derker on March 18th, 170¾, (B. 371,) conveyed to William Tillyer "all yt the westernmost moyety or full half of the above recited tract of land and premises," (i. e. the tract described in B. 371,) "with the appurtenances together with all the moyety or one full half of the above recited salt and fresh meadow with all and singular the houses, barnes," &c. The execution of this deed was witnessed by Alexander Stuart and Lambert Garrison, (B. 550.)

The deed of gift whereby William Tillyer and Mary, his wife, donated the land for the building of an English Church is here given according to its tenor, as it is found recorded in Liber B of Conveyances at page 584.

"The following deed of Gift was Recorded for the freeholders and Inhabitants of the County of Richmond August ye 8th, 1711.

To all Christian People, To Whom these presents shall come, William Tillyer and Mary his wife, of the County of Richmond and Province of New York, Esqre., sends greeting: Know ye, that wee, the sd. William Tillyer and Mary his wife, for and in regard of the reall Love, a true Zeall and Sinceare affection that we doe bear to the Church of England which is by Law Established And for the encouragement of Building of an English Church in Staten Island for the County and Province aforesd in America as * * * by Law Established wee doe freely, clearly, and absolutely give ratife and Confirm unto Caleb Fitchett, Esqre., one of her Majesties most Honorbl Council for the province aforesaid and Joseph Billopp, Nathl Britton and Lambert Garrison, Esqrs., and Alexr. Stuart, Gentl., all of the above county and province, a Certaine parcell of Land in the County of Richmond aforesaid, Lying on Kalres Neck at the head of the ffresh Kill beginning at a small stake and heap of stones and runs towards the Creek South, one chain seventy ffive links then East, three chaine twenty links to the Highway, thence by the Highway north eighteen degrees east on chaine thirty links thence North thirty seven Degrees

West Sixty two links thence West, to the place where it begun. Containing two roods and fifteen perches. To have and to hold the sd parcell of Land for ever to the said Caleb Hethcoat, Joseph Billopp, Nathl Britton, Lambt Garrison and Alexr Stuart to them their heirs and assigns for ever In behalfe of all the ffreeholders and Inhabitants of the above said county as also to them and every of them their heirs and assigns for ever all of the above parcell of land to be, remaine and continue from the date hereof and for ever for Building of an English Church and Church yard on Burying place upon the said Land for the publick benefit as well of the Inhabitants of the said Island as for these above named Gentlemen—And to noother use, the said Lands granted to be applyd but for the sole and proper benefit of the Church of England as by Law establishd. And the sd William Tillyer and Mary, his wife, doe bind themselves their Heirs, Execrs and Adminrs That they shall maintain and defend the said parcell of Land In the Quiett and peaceable possession To them the sd Caleb Hethcoat, Joseph Billopp, Nathl Britton, Lambt Garrison Alexr Stuart and to the said ffreeholders and Inhabitants of the said County, to them and every of them three heirs and assigns forever As for ffee simple agst all manner of persons shall * * * * * and for ever by these presents defend.

In Testimony Whereof the sd William Tillyer and Mary his wife have hereunto sett there and fixt there seals.

Dated this Sixth Day of August In the tenth year of Her Majesties Reign Anno q Domini, 1711.

Sigillant et deliverant
in presence of
AENEAS MCKENZIE,
HENRY BERRY.

WILLIAM TILLYER, [L. S.]
her
MARY X TILLYER, [L. S.]
mark

his
JOHN I M MORGAN
mark
his
HANS X LAWRENCE
mark

Memorandum this 6th Day of August, 1711, Came before me Benjamin Cooper, one of Her Majesties justices for the County aforesaid William Tillyer above named and did acknowledge the above deed of gift to be his voluntary Act and Deed And his wife Mary did also appear before me and being privately examined whether she was compelled or threatened to sign this deed Acknowledged that she did sign it ffreely and Voluntarily without compulsion.

Acknowledged before me

BENJAMIN COOPER."

In pursuance of the instructions of Queen Anne given at St. James the 30th of December 1709, Robert Hunter, Esq., Governor, &c., Thomas Byerly, Esq. Collector and Receiver Generall, George Clark, Esq., Secretary, and Augustine Graham Esq, Surveyor Generall of the Province of New York on June 29th 1713 "let out for the Reverend Aeneas McKenzie, Minister, of Staten Island, in Richmond County, Ellis Duxbury, Thomas Farmer, Augustine Graham, Joseph Arrowsmith, Lambert Gerretson, Nathaniel Brittain, William Tillyer, Richard Merrell, John Morgan and Alexander Steward, all freeholders and of the principall Inhabitants of the said Island, in communion of Church of England as by law established Incorporated by the name of the minister, church wardens and vestry of St. Andrew, in the County of Richmond, and to their successors for ever, all that Stone Church called St. Andrew, & the tenement and lott of ground whereon it is built, situate and being on Carles Neck at the head of ffresh Kill, beginning at a single stake and heap of stones and runs from thence toward the Creek South one chain and seventy five links, thence East three chains twenty links to the highway, thence by the highway North eighteen degrees East one chain thirty links, thence North thirty seven degrees West sixty two links, and thence West to the place where it began, containing in the whole two rood and fifteen perches, formerly granted by William Tillyer for to build the said church upon and for a cemetery and churchyard. * * * * *

(B. 629.)

The following paper by L. P. Gratacap was read:

NOTE ON *Erythronium Americanum* KER.

In examining the flowers of *Erythronium Americanum* Ker., the well known "Yellow Adder's Tongue," in a wet swampy depression on the east side of Pine Hill, and just southwest of Clove Lake, I have noticed an adjustment in the periods of pollination of the anthers of some interest. I venture to write out the note since I cannot recall, and a slight search in the literature fails to reveal, that the process has been hitherto recorded.

The flower of the "Yellow Adder's Tongue," as is well known, is liliaceous in structure, and the tripartite arrangement of its sepals, petals, stamens and pistil, is perfectly obvious. The anthers rise hypogynously around the pistil, which at first they exceed in height, but to which they approximate as they ripen and undergo a longitudinal shrinkage of the greatly extended anther lobes. Usually the six anthers seem nearly identical but an examination of the earlier stages of flowering show that the anthers, in regard to their periods of pollination and maturity, fall into two groups of three each, their members alternating with each other in the flower.

The first group is in full pollination when the involuted edges of the anthers of the second group are still unwrapped. This was the fact noted and an examination of a number of flowers accentuated and repeated this diversity of maturation. There is room here for further study in relation to the synchrony of the of the two groups of stamens and the pistil, but whatever the details of this disparity of period are, the generalization seems warranted that the device is in the order of *economy* by which the energy of pollination of the entire flower is usefully separated into two cycles.

The division was sharp and even, three stamens maturing and withering together and three, their alternates, following in exact sequence.

The irregular ripening of the anthers is familiar in many flowers or all, but the particular interest in this case, possibly true of all lilies, is the even division of the anther periods, in analogy with the tripartite arrangement of the plant.

MINOR NOTES.

The Association has received from Mrs. A. C. Wood, of West New Brighton, through Mr. J. B. Hillyer, part of vol. I, No. 25, of the *Richmond County Mirror*, dated July 7, 1838, containing an account of the Fourth of July celebration held that year on Staten Island, a celebration which seems to have been a notable one in many ways. Beginning with exercises in the village church at Port Richmond opened with prayer by the Rev. Mr. Browlee, including in the program an oration by Ogden P. Edwards and the reading of the Declaration of Independence by Major George Howard, "a vast concourse of people, greater than upon any former occasion on the Island, witnessed the proceedings of the day," which concluded with an elaborate concert by a local amateur band (Mr. Barrett's) and a parade of the Militia. A banquet followed in a marquee in the rear of the Port Richmond Hotel at which 200 covers were laid; the number of toasts, forty-two, gives an idea of the length and importance of the banquet and an interesting feature of the list is the number of old Staten Island names contained therein; Dr. Ephraim Clark, Maj. Gen. Van Beuren, Goodrich, Cropsey, Little, Vermilye, Gen. Denyse, Dixon, Hitchcock, Hagadorn, Howard, Edwards, Arnsley, Capt. Wood, Judge Coddington, Capt. Hungerford, Crocheron, Van Pelt, Barrett, Miller, are some of the many familiar names that appeared. The name of Washington, at that time more than a memory, the recent death of Lafayette, the recent achievements of the Navy in the war of 1812, Jackson, as President of the United States, Tompkins, as Governor of New York, patriotism, rampant and vigorous in thought and expression—all these impress the reader of the stained and faded sheet.

Mr. Thos. Craig exhibited a living specimen of *Batrachospermum moniliforme*, found by Messrs. Wm. T. Davis and Louis Joutel, in a stream at Oakwood—a fresh water alga not before recorded from the Island.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 8.

JUNE 10th, 1899.

The regular meeting of the Association was held at the residence of Mr. J. B. Hillyer, West New Brighton.

In the absence of the President Mr. Hillyer was elected chairman *pro tem*.

Dr. Arthur Hollick gave the following

NOTES ON DEEP WELLS, AT PRINCE'S BAY AND HUGUENOT.

We are all familiar with the fact that Cretaceous strata outcrop at the surface in the vicinity of Kreischerville and that theoretically they underlie the whole of the plain region south of the serpentine ridge and the Fresh Kills marshes, but they are everywhere so covered with superficial deposits that, except in the Kreischerville region, we know but little in regard to them.

Recently, however, I received from Mr. A.W. Johnston, of Prince's Bay, a sample of fine micaceous, sandy clay, identical with the "kaolin" of Kreischerville, which was obtained at a depth of about 130 feet, in a test well driven near the S. S. White Dental Works, in 1886. Following is the record, kindly sent at my request :

Surface, 4 ft. above tide level.	
Sand, 16 ft.	16 ft.
Coarse sand and gravel, (water brackish, flow good), 15 ft	31 "
Soft mud, 25 ft.	56 "
Coarse sand and gravel, (water salt), 14 ft.	70 "
Mud, 50 ft.	120 "
Fine sand, 1 ft.	121 "
Hard pan and gravel, 3 ft.	124 "
Fine white sand ["kaolin"], (no water), 23 ft.	147 "
Clay at bottom	

On May 30th I visited the new resort at Arbutus Lake and found a well being driven, on the strip of beach between the lake and the salt water. At the time of my visit a depth of about 220 ft. had been reached and samples of the material pumped out from that level showed

"kaolin" similar to that from Prince's Bay. No water had been struck.

These and the strata below them are unquestionably the equivalents of those in New Jersey, where the depth at which water-bearing strata may be found in any locality can be predicted with reasonable accuracy, and there is but little question that a careful study of and calculation from the facts now in our possession would result in at least an approximate location of the depth at which certain of these strata should be found on Staten Island. It may be incidentally mentioned in this connection that two calculations for the region near Prince's Bay, each based upon a different series of facts, gave 280 ft. and 312 ft. respectively, as the probable depth at which a recognized water-bearing stratum should be struck.

This is not only a matter of concern to those who are interested in the two wells in question, but it is of far-reaching importance in connection with the future water supply of all Staten Island, as there is no doubt that we must sooner or later abandon our present superficial sources and depend upon deep wells in the coastal plain region.

For those who may be interested in the subject a comprehensive and exhaustive discussion may be found in N. H. Darton's "Artesian Well Prospects in the Atlantic Coastal Plain Region" (Bull. U. S. Geol. Surv. No. 138.)

Reports by Lewis Woolman, on artesian wells, may also be found in the annual reports of the New Jersey Geological Survey for 1895-1897.

On motion the Association adjourned until the second Saturday in September.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 9.

SEPTEMBER 9th, 1899.

The regular meeting of the Association was held at the Staten Island Academy.

Dr. Arthur Hollick exhibited specimens and read the following paper :

NOTES ON THE GEOLOGY AND BOTANY OF THE FOX HILLS GOLF LINKS.

During the present year the Staten Island Cricket and Baseball Club secured control of the tract of land between Vanderbilt avenue and the railroad and proceeded to develop it for a golf links. It is a typical morainal region, consisting of rolling hills and basin-like depressions, in which latter a considerable amount of surface water accumulates, forming swamps or shallow ponds. Amongst those which have received names may be mentioned Clifton Park Pond, Radcliffe's Pond, Brady's Little Pond, Wood Pond and Swell-belly Pond, although most of them were ponds only in time of rainfall or for a brief period afterwards. In developing the tract for golf purposes it was necessary to drain these depressions and trenches were dug through them which carried off the water and left the old bottoms exposed both superficially and in section and caused them to dry out to a greater or less extent.

One was found to contain a coarse peat, which was trenched to a depth of about four feet in places without reaching the limit of the deposit. After the water had been drained off the peat dried rapidly and a ground fire was started which burned for several months. This peat is composed of the remains of all kinds of swamp vegetation, including a fair proportion of *Sphagnum*, but it contains considerable inorganic matter which has been

washed in as silt or blown in as dust from the adjoining hills, as may be seen from the composition of the ash which remained after burning. This is a fine silicious powder, but contains many grains as large as pins' heads.

In another depression was found an extensive deposit of branches, logs and stumps of trees, the latter in place and much of the material in the form of brown lignite. This entire deposit is covered to a depth of about two feet with surface soil having the same appearance and composition as that of the hills. Whether this old forest was part of that which covered the tract up to about the year 1860 is a question which cannot be answered by means of the facts now in our possession, but the conditions of burial and the lignification of the wood, seem to indicate that it was older. There is no record as to whether the surface soil is a natural deposit or whether it may represent an attempt to fill up the depression some time ago nor is there conclusive evidence that it is a natural layer.

One comparatively deep little pond proved to be of considerable interest as it contained a very fine deposit, almost destitute of organic matter, in which impressions of leaves of forest trees are beautifully preserved. These were not observed until after the mud had been broken up by a plow and the fragments hardened by exposure into a firm sandy clay. Inasmuch as no trees have been growing within several hundred feet of the pond during the past thirty or forty years these impressions must represent either the leaves of trees which grew around it that length of time since, or

else such leaves as were blown in from a distance during more recent years. I am inclined to think that the latter is the case and that a large part of the mud was also due to æolian action, as it is finer than water-transported material and is quite different from the largely organic sediment of other shallower depressions. The ordinary bog silt is much darker in color and always contains the roots of living and dead vegetation to a greater or less extent. During dry, windy weather the process of denudation by æolian action is perfectly obvious on the hills, and it may be readily appreciated that in the lapse of thirty or forty years the amount of dust blown into a pond in such a location would be considerable.

The surface soil on the hills is similar to that of deforested portions of the moraine elsewhere in the vicinity. All the humus and forest loam which formed the surface soil when the region was wooded has been washed or blown into the hollows, along with much of the finer inorganic soil, leaving the present surface rough and gravelly, in which red Triassic sandstone and shale are particularly conspicuous elements. The boulders are all of comparatively small size and in fair abundance, a large majority of them being diabase, evidently derived from New Jersey, and a considerable number of quartzose limonite, from the nearby serpentine ridge of the Island. The scarcity of limestone boulders and other erratics from distant areas is perhaps worth noting, as well as the total absence of Cretaceous or Tertiary material, although the hills of the morainal front, not more than a mile further south, contain a conspicuous amount of gravel and clay of Cretaceous and Tertiary age and numerous limestone boulders.

It would seem as if the first advance of the ice, carrying with it the rock fragments from the more distant regions, had also eroded and shoved ahead the limited Cretaceous and Tertiary deposits of the Island, leaving these to form the frontal range of hills near the Fingerboard road, Sand lane and Richmond avenue, and

that in the subsequent recession the ice deposited its load over the previously eroded area and formed the hills now under consideration. In all the cuts thus far made through these hills nothing but boulder till and gravel has been found.

As might be expected the surface drainage is more or less complicated, but it all finally finds an outlet into the water course which flows to the north and east and finally discharges near the old Stapleton landing. A well defined water shed may be observed just in the rear of the club house, where several small pond holes occupy the summit of a ridge. Part of the water which accumulates in these flows into a water course which discharges near the old Clifton landing and part flows into the Stapleton water course. A very slight cut or fill would easily divert the water at this point in either direction.

* * * * *

The vegetation of the ponds and swamps presents no features of special interest and it is probably about the same now as it was years ago. I was curious, however, to learn what kind of vegetation would appear after the old pond bottoms had been drained, plowed, harrowed and rolled. The aquatic vegetation (*Pontederia*, *Sagittaria*, &c.) was entirely obliterated, as were also the several species of *Carex* and *Scirpus* which were formerly abundant. In place of these, and practically to the exclusion of everything else, there appeared a rank growth of *Panicum Crus-galli* L. and *P. proliferum* Lam. which grasses, with constant mowing, now form a coarse carpet-like covering, the long stems spreading out laterally and lying flat on the surface.

On the higher ground, wherever the surface has been denuded or where subsoil has been spread, *Panicum proliferum*, *P. sanguinale* L. and *P. glabrum* Gaud. seem to be the only species which have been able to take hold in the sterile soil.

On the dry hill tops a peculiar vegetation, adapted to the changed conditions, has taken possession. The former forest vegetation has entirely disappeared and

in its place are barren-ground grasses and an abundance of *Aster ericoides* L. Early in the season *Danthonia spicata* Beauv. was quite prominent, together with *Agrostis scabra* Willd. and the erect simple form of *Panicum dichotomum* L. At the present time this species has assumed its densely tufted autumnal form and *P. capillare* L. has become the most abundantly represented species. The most conspicuous grasses are *Aristida dichotoma* Michx and *A. gracilis* Ell., which cover large areas on the driest parts of the hills, where the purplish color of the latter species gives a peculiar and characteristic appearance to the surface.

On the lower slopes and levels, where the ground is richer, *Agrostis vulgaris* With. is the prevailing species, but it becomes less and less abundant and finally disappears almost entirely as the higher and more barren parts of the hills are reached. With the exception of this latter species the prevailing grasses are either coarse and laterally spreading, like *Panicum proliferum*, *P. sanguinale*, &c., or else they grow in isolated tufts which do not coalesce into an even mat or turf, such as *Danthonia* and the *Aristidas*. What the ultimate effect of constant mowing and rolling may be has yet to be learned, but the problem of making and maintaining a close erect turf is one which it is necessary to solve and while it would be a hazardous experiment to destroy the

species which are best fitted to thrive under the existing conditions, the experiment might be tried of harrowing top dressing and fertilizing and introducing species of *Agrostis* and *Poa* to gradually replace them.

RECENT LITERATURE RELATING TO STATEN ISLAND.

Old Billop Mansion to be a Public Museum. N. Y. Herald, Sept. 3rd, 1899.

An article to the effect that Dr. John C. Holmes is authority for the statement that the Billop house at Tottenville is to be made a public museum of Revolutionary relics. A good picture of the house, viewed from the water front, accompanies the article.

Some Features of the Drift on Staten Island. N. Y. Arthur Hollick, Ann. N. Y. Acad. Sci. Vol. xii. (1899) pp. 91-102; pl. i.

This paper was first read before the Geological Society of America and published in abstract in Science, Oct. 7th, 1898. It now appears in full with a map showing the known and inferred morainal limits. The most important feature of the paper is the lists of fossils which have been found in the Drift. These contain 112 Palæozoic and 42 Mesozoic species, all identified from the material in our collections and noted from time to time in our Proceedings, but brought together in sequence in this paper for the first time, with the nomenclature revised to date.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 10.

OCTOBER 14th, 1899.

The regular meeting of the Association was held at the Staten Island Academy, with the president in the chair.

Mr. Wm. Allaire Shortt, Tompkinsville, was elected an active member.

Dr. Arthur Hollick exhibited cones of white spruce and a broken molar of a mastodon, and read the following paper:

A QUATERNARY LAKE DEPOSIT IN THE MORAVIAN CEMETERY.

In our last Proceedings I mentioned the discovery of a buried forest, under what appeared to be a layer of bowlder drift, in a morainal basin at the Fox Hills golf links. Since that fact was recorded I became interested in what appeared to be a similar deposit in the Moravian Cemetery, where for some time past the work of cleaning out a swamp has been in progress, in the rear of the Kunhardt Mausoleum. The surface consisted of peat and a black organic mud, such as may be seen in any swamp where decaying vegetation has accumulated, but below this was a more sandy deposit and when this was reached a quantity of logs and large branches were brought to light and the similarity to the Fox Hills material was at once apparent. There was, however, nothing to indicate that these were anything more than the remains of a comparatively recent forest growth. It was not until a layer containing a large number of small cones was reached that I began to realize that it must represent a period in which different conditions existed from those which now prevail here. A careful examination of the cones showed them to belong to the white spruce (*Picea Canadensis* B. S. P.)—a tree of

northern range, which does not now grow further south than northern New York, Vermont, New Hampshire and Maine—and this fact naturally led to the suspicion that at least the lower portion of the deposit might be of Quaternary age.

On inquiry, the superintendent of the cemetery, Mr. N. J. Ostrander, volunteered the information that "some bones" had been dug up which he very kindly gave to me for the Association. They prove to be the broken pieces of a mastodon's molar, thus proving beyond doubt the Quaternary age of at least the lower part of the deposit and justifying the belief that even the logs and branches above are probably the remains of a forest growth which antedated that which is now in existence in the vicinity. It also strengthens the suspicion that the Fox Hills buried forest may also represent former similar conditions.

The swamp, which covered a superficial area of about 3,500 square feet, was formerly rather a conspicuous feature, by reason of its pool of dark coffee-colored water and quaking margin of peat and sedges, occupying a depression in the rolling morainal surface, filling up and overflowing in time of rains and becoming almost or completely dry in periods of drought. Its appearance, however, became incongruous with the recent development of the Cemetery and the decision was reached to drain off the water, dig out the mud and allow the excavation to fill up again as a pond.

The location is about 1,200 ft. from the southern border of the moraine, at an elevation of about 120 ft. above tide level.

The depression is roughly cone-shaped, with steep, almost perpendicular sides on the east and north, from which the bottom slopes upward irregularly to the south and west. The deepest part is in the northeast corner, where the entire deposit was about 25 ft. in thickness. Every particle of this has been taken out and the sides and bottom of boulder drift are exposed to view.

The surface deposit was of fine moss peat and a coarse peat composed of all kinds of swamp vegetation, extending out to the pond margin. Below this was a fine organic mud, extending all across the basin and forming the pond bottom. From this to the deepest part of the basin the deposit was a fine sandy silt, black with decayed vegetation, distinctly stratified, and the lower part more or less compacted.

The spruce cones were at a distance of about 10 feet from the surface, distributed in considerable numbers in a layer about a foot in thickness, while below this was found the mastodon's tooth, at a depth of about 23 feet. The entire deposit bore every indication of having been laid down in still water in a continuous and unbroken series of layers, and inasmuch as it was in a morainal basin it must all have been post-morainal in age.

The indications are that a pond was formed in the depression in the moraine immediately after the recession of the ice

sheet and that this pond was a receptacle for dust, silt and decaying vegetation ever since; the accumulations gradually filling it up and finally converting it into a swamp with a little pool of casual water in the middle.

If we could know the rate of deposition the depth of the deposit would give us a datum for time calculation, but there are no facts available in this connection. In the lower part the layers are quite distinct and the number of layers to an inch may be more or less accurately determined, but we do not know the length of time represented by a layer so that any calculations based upon them would be mere guess work.

Incidentally it may however, be remarked that the more recent calculations by competent authorities indicate that the glacial conditions in this part of the North American continent began to disappear about 10,000 years ago, and it must have been subsequent to that time that the spruce forest covered our Island and the mastodon was a living reality here.

RECENT LITERATURE RELATING TO STATEN ISLAND.

Golf and Natural Science. N. Y. Ev. Post, Sept. 23rd, 1899. A semi-humorous article, based upon the facts in connection with the Fox Hills golf links, published in our Proceedings for September.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. II.

NOVEMBER 11th, 1899.

The 19th annual meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. O. P. Geoffroy was elected chairman *pro tem*.

Reports of officers for the past year were submitted and approved, as follows:

Secretary :

No. of members on roll at date of last annual report.....	91
Since elected.....	3
Deceased ..	1
Dropped.....	5
Resigned.....	6
Leaving, at date.....	82

Treasurer :

Balance on hand at date of the last annual report.....	\$246.74
Receipts.....	223.50
Disbursements.....	136.63
Balance on hand, at date.....	333.61

Curator :

Additions to the Museum :

No. of separate donations.....	6
No. of specimens included in above.....	191

Classified as :

Botany	20
Geology and Mineralogy.....	112
Paleontology.....	59

Additions to the library :

No. of societies and institutions on the mailing list.....	79
No. from which exchanges have been received during the year.....	47
No. of additions by exchange.....	268
No. of additions by subscription.....	79
No. of additions by donation.....	23
No. of separate titles included in above additions.....	76

The election of officers for the ensuing year resulted in the re-election of the former incumbents, as follows :

President, Walter C. Kerr; secretary, Arthur Hollick; treasurer, J. Blake Hill-

yer; curator, Eric T. King; trustee, Wm. T. Davis.

Mr. William Fox, West New Brighton, was elected an active member.

On motion it was *resolved*: that the regular meetings of the Association during the ensuing year be held on the second Saturday evening of each month, except July and August.

The secretary read the following paper, communicated by Mr. Chas. A. Dayton :

NOTES ON SOME STATEN ISLAND MARINE MOLLUSCA.

While living at Tottenville during the summers of 1893-95 I spent considerable time collecting marine shells on the south side of Staten Island and vicinity and dredging in Raritan and the Lower Bay, from the vicinity of Keyport, N. J., towards Sandy Hook. The opportunities for dredging in these waters are somewhat limited, for the reason that they are largely staked out in oyster beds, which could not be disturbed. I was therefore obliged to confine my dredging to the mud bottoms at the edges of the channels, at a depth of from three to five fathoms. The dredge used was a curved-toothed oyster rake, the inside lined with wire netting of $\frac{1}{8}$ in. mesh, leaving about three inches of the teeth points free.

At New Dorp, on a sandy point, at low water, I found many specimens of *Neverita duplicata* (Say) Stimps. buried in the sand, awaiting the return of the tide. On one occasion the beach was strewn with *Ensatella Americana* (Gould) Verr.,—fresh shells in fine condition. Between Oakwood and Giffords I could always find

Spisula solidissima similis Say, *Macoma* Carp., *Sycotypus canaliculatus* (Linn.) Gill., *Urosalpinx cinereus* (Say) Stimps., *Baltica* Linn., *Petricola pholadiformis* Lam., *Scapharca transversa* (Say) H. and A. Ad., *Eupleura caudata* (Say) H. and A. Ad., *Mya arenaria* Linn., odd valves of *Pholas truncata* Say, *Crepidula fornicata* Lam., and one odd valve of *Tagelus divisus* Say, *Crepidula plana* Say, *Crepidula convexa* Say, and occasional dead shells of *Lunatia heros* (Say) H. and A. Ad. Speng. Numbers of *Nucula proxima* Say were found at the mouth of the Shrewsbury River, near the government dock, at Sandy Hook, and in Arthur Kill, at Tottenville, five specimens of *Scalaria lineata* Say.

At Eltingville, at low water, *Littorina littorea* Linn. was found on stones. At Tottenville, *Littorina rudis* (Maton) Gould, and *Scalaria lineata* Say, in salt grass, and *Ilyanassa obsoleta* (Say) Stimps., in the mud at low water. At Kreischerville, on a muddy shore, I once found about fifty specimens of *Haminea solitaria* (Say) Verr., but never saw them on any other occasion. In the Drift, at South Amboy, *Tottenia Manhattensis* (Prime) Verr. were found in profusion and a few specimens of *Utriculus*.

In dredging, as previously mentioned, I found *Yoldia limatula* (Say) Stimps. in abundance; also *Callista convexa* (Say) H. and A. Ad., *Venus mercenaria* Linn., *Mulinia lateralis* (Say) Gray, *Lyonsia hyalina* Conr., *Clidophora trilineata* (Say)

NOTE.—In Sanderson Smith's "Catalogue of the Mollusca of Staten Island" (Proc. Nat. Sci. Assn. S. I., Extra No. 5, Mch, 1887) of the above recorded species the following are mentioned as rare: *Pholas truncata*, *Lunatia heros*, *Scalaria lineata*, *Haminea solitaria* and *Urosalpinx cinerea*, while the following are not mentioned at all: *Macoma Baltica* Linn., *Tagelus divisus* Speng., *Tottenia Manhattensis* (Prime) Verr. and *Utriculus*, sp? (*U. canaliculatus* (Say) Stimps?), although these last two, having been found in New Jersey only, may fairly be excluded from the Staten Island list.

A. H.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. NO. 12.

DECEMBER 9th, 1899.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Samuel Henshaw was elected chairman *pro em*.

Messrs. Nils Bergquist, Tompkinsville and C. A. Ingalls, Port Richmond, were elected active members.

The following communication was received from Mr. L. P. Gratacap:

NOTES ON THE LIMONITE BEDS ON OCEAN TERRACE.

Recently, in the work on the Island's roads, a broad macadamized avenue has been constructed over Ocean Terrace, and in the necessary re-grading of the old road the superficial earth was removed and areas of soft decomposing serpentine exposed. This serpentine, saturated with water, readily crumbles in the hand and resembles almost a green clay, but hardens upon exposure to the air. It shows in some specimens a large number of included black specks and crystals, which are magnetite, and not chromite, as far as my tests went. This mineral may have been in some cases the source of the limonitic partings which characterize some of the decomposed serpentine. To quote G. P. Merrill: "under continual alternations of heat and cold, moisture and dryness, magnetite slowly decomposes, giving rise to hydrated sesquioxides."

A little way to the east, and in fact surrounding this road at the point where the serpentine appears, are the old limonite mines. Large masses, highly silice-

ous, are exposed in some of the abandoned excavations. These masses present superimposed films and crusts which indicate clearly their aqueous origin. There seems to be a necessary connection between these limonite beds and the underlying serpentine. The former are clearly preglacial, the drift covering them completely, though along the immediate indefinite line of contact there is some intermixture of drift and iron ore. The serpentine, weathering as do the green serpentines of Harford Co., Md., into a "gray brown soil which consists of 60.17 per cent. silica, 10.40 per cent. of iron oxides, 14.81 per cent. of alumina, and only 7.23 per cent. of magnesia," would have furnished just the combination of elements requisite to have formed, in basins of concentration—bogs, marshes, or shallow lakes—the siliceous limonites, the pulverulent iron soil and the occasional magnesian carbonates—the latter, I believe, not found on Ocean Terrace—which are associated with the serpentine areas on Staten Island. Indeed it is not necessary to assume water basins. The meteoric waters penetrating the decomposing caps of serpentine would leave, in time, gathered into more or less rich deposits, the freed iron oxide, assisted by a wide spread capillary action, constantly enriching and increasing the initial points of segregation.

There seem to be no evidences of pond or marsh life in these limonite beds, and their formation may have progressed under sub-aërial agencies only.

In the Gryme's Hill ore pits streaks

of talcose schist point yet more conclusively to the indigenous origin of the iron ore in the serpentine.

RECENT LITERATURE RELATING TO
STATEN ISLAND.

The secretary read newspaper articles

from the New York Morning Journal of Nov. 14th and the New York Evening Post of Nov. 18th, both relating to the discovery of the Mastodon's tooth in the Moravian Cemetery, described at the October meeting of the Association.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 13.

JANUARY 13th, 1900.

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the president Mr. J. Blake Hillyer was elected chairman *pro tem*.

Dr. Arthur Hollick exhibited specimens recently collected and read the following

GEOLOGICAL NOTES.

Decomposed serpentine and associated minerals. In Mr. L. P. Gratacap's paper, published in the preceding issue of our Proceedings, mention is made of an exposure of serpentine, near the old limonite mines, in a cutting on Ocean Terrace road. A similar cut has recently been made in regrading the Todt Hill road near Moravian cemetery, which has exposed a fine section through the decomposed upper portion of the serpentine, and as this locality is south of the moraine the rock has not been disturbed by glacial action nor has the surface soil been mixed with drift deposits. Every stage in rock disintegration and soil formation *in situ* may be traced, from the merely fractured rock at the base, through that which is partially disintegrated, to that in which the disintegration is complete and the rock is represented by the surface soil.

The minerals which have resulted from this decomposition are particularly conspicuous and excellent specimens may be obtained with but little trouble. Green chlorite and white talc in bands or seams, or in finely comminuted particles massed together like clay, alternate with red, brown and purplish limonite in irregular

patches or pockets, the series resting upon undecomposed serpentine below and covered by limonite soil above.

The derivation of the latter from the former may be traced from the unaltered chromite or magnetite in the serpentine, to where these minerals occur as brown specks of limonite where the rock has become talcose or chloritic, and finally to the zone of complete disintegration, where the limonite has become segregated into seams or pockets, while the rock is represented by incoherent accumulations or loose flakes of talc and chlorite. The pockets in which the limonite occurs appear to be merely irregularities in the serpentine due to decomposition by the ordinary atmospheric agencies at the points of easiest attack. They are narrow below, often extending downward into a thin seam along a joint or fracture and are broad above, so that the limonite as a whole consists of a series of irregularly wedged-shaped masses in its lower part, which merge into and form a continuous bed at the surface.

Joints and fractures in the serpentine appear to have been the initial lines of oxidation, down and from each side of which the process gradually extended, thus forming the wedge shaped pockets and leaving an irregular surface on the undecomposed rock.

So far as this locality is concerned all the facts indicate that the limonite was solely the result of decomposition of the serpentine in place, and the oxidation of the included chromite or magnetite by the ordinary atmospheric agencies.

There is no indication that sub-surface waters had anything to do with its formation or that any part was due to sedimentation or deposition in surface waters.

Quartz crystals and chalcedony, such as are common at the Ocean Terrace locality and near Four Corners, which clearly indicate if not prove the action of thermal waters, (See paper by L. P. Gratacap in our Proceedings for Mch. 13th, 1890,) are wanting at the locality now under discussion; but quartz does occur there in a unique form, as rounded masses, having a radiating or rosette structure, and varying from single specimens the size of a pea or walnut to irregular aggregates of these as large as a goose egg. They may be found in considerable quantity, free, in the decomposed talc or chlorite, and are evidently merely another of the results of decomposition of the serpentine in place. This particular form of quartz has not heretofore been reported from Staten Island, nor am I familiar with it from elsewhere.

A magnetite drift boulder. An interesting drift boulder was found in the bed of the brook at the lower end of the Black Horse ravine, composed of magnetite, graphite and pyroxene or hypersthene. It so closely similar to certain of the Adirondack rocks that we are justified in considering it as having been derived from that region, especially as there is no other rock outcrop with which it could be identified elsewhere on the line of glacial movement towards Staten Island.

In this connection it may be of interest to recall that a boulder of labradorite, probably also derived from the same region, was found at the base of Richmond Hill some years ago and noted in our Proceedings of Oct. 10, 1885.

Fossiliferous drift boulders. A number of drift boulders containing fossils have recently been found, some of which have yielded species new to our local list.

At our meeting of last September, in

discussing the geological features of the Fox Hills golf links, I commented upon the scarcity of limestone bowlders. Since then a small specimen of Lower Helderberg age was found there, containing *Anoplothecca concava* (Hall), *Trematospira costata* Hall, *Dalmanella perelegans* Hall, and *Leptæna rhomboidalis rugosa* (Hall),—the last three species not before recorded from the Island.

In the vicinity of Eckstein's brewery, at Four Corners, was found a fragment of Hudson shaly sandstone, containing a specimen of *Ambonychia radiata* Hall,—a species previously reported only from Kreischerville.

On the beach, between Woods of Arden and Abutts Lane, three interesting finds were made, as follows:

1. Lower Helderberg limestone, containing *Orthothetes Woolworthanus* (Hall), *Spirifer macropleura* (Cour.), *Rhipidomella oblata* Hall, *Eritonia medialis* (Vanux.) *Meristella lata* Hall, *Dalmanella subcarinata* Hall, *Dalmanella perelegans* Hall, *Leptæna rhomboidalis rugosa* (Hall) and *Orthostrophia strophomenoides* Hall,—the latter another addition to our list.

2. Oriskany sandstone, containing *Chonostrophia complanata* Hall, *Dalmanella subcarinata* Hall, *Spirifer submucronatus* Hall and *Spirifer Saffordi* Hall,—the last two being further additions to our list. This boulder also contained dismembered parts of a trilobite, apparently a *Dalmanites* but too fragmentary for specific determination.

3. Triassic shale, with poorly preserved impressions of *Loperia simplex* Newb. and a conifer, apparently *Cheirolepis Munsteri* (Schenk) Schimpf. Ordinarily such specimens would be too poor to merit attention, but our local Triassic material has yielded so few fossils that even these are of interest for us. The only others in our collection are impressions of algae from the outcrop at Mariners' Harbor, described in our Proceedings for April 11th, 1889,

and one specimen of *Equisetum Rogersi* Schimp. in a drift boulder found at Arrochar, described in our Proceedings for Sept. 9th, 1893.

For purposes of comparison I have here a specimen of *Cheirolepis* in green Triassic shale from Milford, N. J., and it may be of interest to note that this is likewise the only locality, so far as I am aware, at which *Equisetum Rogersi* has been found in New Jersey.

RECENT LITERATURE RELATING TO STATEN ISLAND

Silver Lake Park. N. Y. Tribune, Sun., Dec. 10th, 1899. An illustrated account of the proposed Silver Lake Park, giving the history of the act by virtue of which the boundaries were defined and the commissioners appointed; the legal

complications which ensued by reason of the passage of the Greater New York charter; matters of local history connected with the lake and its vicinity; description of the natural features, etc.

The article was doubtless called forth by the recent decision of the Appellate Division of the Supreme Court confirming the validity of the act. No mention is made, however, of the fact that the term of office of the commissioners will expire next May and hence that additional legislation will be necessary in case the park is to be constructed as originally intended.

In this connection it may be noted that a bill was prepared and has already been introduced in the Legislature, designed to obviate all legal difficulties.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 14.

FEBRUARY 10th, 1900.

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton, with the president in the chair.

Mr. J. V. Wright, New Brighton, and Rev. C. C. Walker, Clifton, were elected active members.

The secretary called attention to the death, on January 22nd, of Mr. Geo. W. Wright, who was one of the oldest members and one of the organizers of the Association. For many years he was well known in the community as a teacher in the public schools of Stapleton and West New Brighton and was universally respected. He always maintained an interest in the Association, although failing health in recent years rendered active participation in its affairs impossible.

On motion the secretary was instructed to incorporate the above memorandum in the minutes, together with an expression of the Association's sorrow on account of his death and respect for his kindly traits and sterling integrity of character.

Mr. Walter C. Kerr read the following account of

A DEEP WELL IN THE SERPENTINE AT DONGAN HILLS.

During the summer and fall of 1895 Mr. Ernest Flagg, one of our members, undertook to drive a well on his premises near the Country Club grounds, the elevation being some 175 feet above tide water. A 6 in. well was started and surface water was struck in moderate quantities. This, however, was cased off with 6 in. pipe and the well continued to a

depth of 100 or more feet without encountering additional water. From within seven feet of the surface this well was driven through serpentine rock, of the usual character found in our hills. The casing near the top of the well not being perfectly tight, more or less water would work down and it was therefore impossible to tell whether small streams were struck at various depths, but the well was continued to some 278 feet, or about 100 feet below tide water, without any abundant flow. Two dynamite torpedoes were then exploded in the well which is said to have largely increased the flow, probably by breaking up the rock and opening crevices. The blasts also resulted in filling the bottom of the well for a distance of some twelve feet, leaving the present net depth 265 feet. No samples of the borings were kept except at the final depth of 278 feet, which are here shown and added to the Association's collection. The general appearance of the borings, from the top to the bottom of this well, was substantially the same as of the sample here submitted, upon which microscopic examination can be made.

The well now yields a good flow of pure, clear water and a pump having a capacity of some 250 to 300 gallons per minute is said not to pump it dry.

Mr. Thomas Craig and Dr. Arthur Hollick exhibited specimens and gave

FURTHER NOTES ON THE QUATERNARY LAKE DEPOSIT IN MORAVIAN CEMETERY.

Mr. Craig exhibited under the micro-

scope a section of wood from a well-lig-nitized piece found in the deposit. The specimen was coniferous and apparently a species of pine, or perhaps white spruce, but the tissue was too much distorted by compression for accurate comparison.

Dr. Hollick exhibited the results obtained by macerating in water a quantity of the stratified deposit from the pond. The coarse vegetable debris floated to the top and was skimmed off, after which the water was drained away and the residue which had settled at the bottom was dried. The former consisted of fragments of twigs and cone scales of white spruce, (*Picea Canadensis* B. S. P.) bark, and some small particles of charcoal. The residue from the bottom was an exceedingly fine inorganic powder, relatively small in amount and containing a few coarse angular fragments of rock, varying in size from that of a pin's head to some as large as an orange pit. The absence of any irregularity in the layers of the deposit as a whole and the character of the material composing it, indicated a gradual and quiet accumulation by æolian agency rather than by running water and this would also infer a longer period of time

for accumulation than if due to streams depositing material in the pond.

Another interesting fact is that although the inorganic material is apparently identical with that of the moraine surrounding it the red coloring so characteristic of the latter is absent, due to the reduction of the red iron oxide by the chemical action of the decaying vegetation. In some of the coarser fragments of shale and sandstone, however, this reduction may be seen to be only superficial and the red color may be found by breaking them open. The decolorizing influence may also be seen to extend into the soil of the moraine for some distance from the limits of the pond deposit.

MINOR NOTES.

Mr. Kerr exhibited branches of the common pitch pine (*Pinus rigida* Mill), representing shoots growing from old stumps, in which each sheath of needles was subtended by a linear bract about an inch in length. As the normal branches of the tree do not bear these bracts it was suggested that they perhaps were an indication of atavism.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VII. No. 15.

MARCH 10th, 1900.

The regular meeting of the Association was held at the residence of Mr. Lester W. Clark, New Brighton.

In the absence of the president Mr. Howard R. Bayne was elected chairman *pro tem*.

Mr. E. C. Delavan read a paper, illustrated by maps and tracings of old surveys, on

COLONEL FRANCIS LOVELACE AND HIS
PLANTATION ON STATEN ISLAND.

The paper will be published in full as Special Number 22.

On motion it was

Resolved, That a vote of thanks be tendered to Mr. Delavan for his painstaking work and for his willingness that the results of his labors should be made a matter of public record.

MINOR NOTES.

Mr. Eric T. King exhibited specimens of Tertiary (?) sandstone and conglomerate, occurring as Drift material at Arrochar, and containing impressions of vegetation. The rock is apparently identical with that described in our Proceedings of January 9th, 1897, from the same locality, in which jointed stems and rhizomes of a grass were found. A special interest attaches to the specimens recently brought to light from the fact that they contain well defined impressions of grass leaves, which are probably referable to the same species as that to which the stems and rhizomes belong.

Mr. Wm. Fox exhibited a branch of a pine tree, showing burrows made by the pine beetle, (*Tomicus sp?*), together with a plaster cast of the markings.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 16.

APRIL 14th, 1900.

The regular meeting of the Association was held at the Staten Island Academy, with the president in the chair.

The following memorandum by Mr. Ira K. Morris was read:

**AN OLD LAND MARK DESTROYED
BY FIRE.**

I have thought it worth while to call the attention of the Association to the fact, that the unoccupied building on Richmond terrace, New Brighton, between Lafayette and Clinton avenues, belonging to Mr. Cornelius A. Hart, which was destroyed by fire on Thursday afternoon, 12th inst., was once the home of the first resident Roman Catholic priest on Staten Island.

Rev. Ildefonso Mcdrano, a native of Spain, who had conducted mission services in the old gun factory, which stood on the now vacant lot at the corner of Richmond terrace and Lafayette avenue, organized the first Roman Catholic church on Staten Island, of which there is any authentic record, in that old building, and resided but a short distance away in the once handsome dwelling, just destroyed.

The church, which became St. Peter's, was organized on the first day of April, 1839. The New Brighton Association gave the land for a new edifice, which still stands near the Pavilion Hotel at New Brighton. Father Mcdrano remained here until 1845.

Mr. Morris also presented a gavel, made from the partially lignitised wood of

an old spile, unearthed while digging the foundation for a bridge over Lemon Creek, in Westfield, with the following description:

A GAVEL MADE FROM AN OLD SPILE.

This gavel was made by ex-Sheriff Abraham Winant, of Rossville, who is an inspector of construction in the Highway Department of the Borough of Richmond.

During the year 1899 a stone bridge was constructed over the roadway on Lemon Creek, the dividing line between Pleasant Plains and Prince's Bay, in the old town of Westfield.

In preparing the ground for the stone foundation of the bridge, workmen found an oaken spile, which, so far as investigation proves, has been in the earth for fully a century.

The ground from which the spile was taken was formerly owned by the father of Mr. Israel Bedell, aged eighty years, of Pleasant Plains. He is certain that long before his time the piece of timber was inserted in the ground. Other very old citizens of Westfield claim that it had been there for over one hundred years.

I think we can form an approximately correct idea as to the date when this piece of timber was placed in the ground, from the date of the manuscript specifications for the widening and straightening of the Richmond and Amboy roads. This was written some time prior to 1774. It was read by me at our meeting of Feb. 8th, 1896, and was published in full in the Proceedings of that date, under the

title "A Document Found Among the Papers of the late Rev. Joseph Totten," to which reference may be had for details.

It seems highly probable that this pile represents a part of the material used in the improvements specified in this document, as the location of the road is practically the same now as it was at that time. The Silas Bedell mentioned was probably the owner of the land where the timber was sunk.

Dr. Arthur Hollick exhibited specimens of boulder till, gravel and sand and read the following paper :

DRIFT AND KAME DEPOSITS ON THE LINE
OF THE SOUTH SIDE BOULEVARD.

Recent operations on our roads have been prolific in matters of interest to the geologist. In the construction of the new Boulevard the direction taken was directly through the morainal front and cuttings were made which exposed a section of the moraine at its extreme southern edge, at the starting point near Grasmere station. To some extent the kame deposits further on were also cut through, but as these are but little above grade level the sections exposed are not extensive. However, the transition from the typical unassorted boulder till of the moraine, to the water assorted gravel and

sand of the kame deposits, may be followed step by step in the exposure, along the side of the road until it reaches the level of the salt marsh.

We have had so few opportunities to examine and study the structure and composition of the deposits south of the moraine that even these limited exposures are welcome. Those which are nearest to the moraine consist of coarse cobble stones, many of which are but little water worn. These grade into coarse gravel further on and ultimately into stratified sand, which latter often shows the characteristic flow and plunge structure of material deposited in rapidly flowing currents.

In composition the sand and gravel are mostly finely comminuted Triassic shale, with a fair admixture of quartz, granite, trap and some soapstone, in about the same relative proportions in which these occur in the till of the moraine in the vicinity. Almost the only other record which we have of the character of the deposits which enter into the composition of the plain region south of the moraine is contained in a paper by Dr. N. L. Britton, describing the material exposed in a cutting made for a drain on the Vanderbilt farm at New Dorp, which was published in our Proceedings for Jan. 14th, 1888.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VII. No. 17.

MAY 12th, 1900.

The regular meeting of the Association was held at the residence of Mr. Alexander Perry, New Brighton. In the absence of the president Mr. E. C. Delavan was elected chairman *pro tem*.

The secretary reported that Mr. Walter C. Kerr had been recently elected a member of the commission to establish Silver Lake Park, so that the Association is now represented by two members on the commission. The secretary also briefly reviewed the progress of the park movement on the Island and the part which the Association has taken in it, from the time of Mr. Kerr's preliminary presentation of the subject at the meeting of the Association, June 8th, 1895, up to the reorganization of the Silver Lake Park Commission, in accordance with the recently amended Silver Lake Park act. (Chapter 653, Laws of 1900.)

The following paper by Mr. L. P. Gratacap was read:

ARE THE KREISCHERVILLE CLAYS ALL
CRETACEOUS IN AGE?

An inspection of the clay deposits at Kreischerville, and between that place and Rossville, especially in the neighborhood of the picturesque community colloquially referred to as "Africa," near the road from Pleasant Plains, reveals their separate and *fossetted* character. They suggest a continuous sheet of the clay deposits which has been sheared off, leaving here and there, quite disconnected pits or depressions filled with clay. As if in some general progressive movement,

whether by ice or floods, the irregular superficial covering had been displaced, and the deeper seated pockets which, from consolidation or their low position resisted removal, were left behind.

This pocket character of the clay beds is quite striking. Subsequent drift deposits, or even Quaternary alluvial formations, have covered them and they remain isolated incidents in the topography of that section, although they may, below the surface, have deep seated connexions. On this hypothesis they represent the stocks of former elevated knobs or ridges.

The region has been a flood plain or shore in Quaternary days. Heavy blankets of sand prevail in "Sandy Ground" and around Rossville, and sand covers in some of the clay pits. It is doubtful if all of the clay pits in this vicinity can be referred to the Cretaceous. The angular white sand, slightly micaceous, which forms the upper beds at some of the kaolin (?) pits might be reasonably regarded as more recent, and it is not clear that even the underlying clay may not be referred to the same period.

As the observer is carried by the railroad from Elizabethport to Perth Amboy he is impressed with the ridgy character of Staten Island, rising conspicuously above the levels of Seawarren and East Rahway and Maurers, where clay beds of Cretaceous age occur, and the suggestion is forcibly made that Raritan Bay, and the deep sinus northward occupies a fold or a slight synclinal trough with Staten

Island on the north and east, and Keyport, Cliffwood, Morgans and South Amboy on the south and west. Much of this apparent elevation of course is due to the terminal morainal accumulations, but is it not permissible to infer a slight marginal inflection in the Cretaceous beds, or a deformation, by which the Kreischerville beds have been sensibly raised above synchroneal strata on the west side of Arthur Kill?

The hypothetical origin of these clay beds is found in the decomposition of granitic rocks. The clay sand and kaolin examined a year ago in this region presented just such an appearance as may be seen anywhere where granite is undergoing decomposition. In the geological chart of Staten Island prepared by Dr. Britton in 1880 the Archaean (?) rocks are shown encircling the serpentine and extending beyond Richmond Hill across the meadows north of Rossville into New Jersey. It seems probable that these rocks girdled the serpentine, and that

their extensive decomposition furnished material for the Triassic north of the serpentine area, as well as clay and kaolin for the Kreischerville area south of it. Examination of these clay pits, together with the superficial deposits, and further search for fossil vestiges of life in them, still opens a field for research. Dr. Hollick's results obtained from the Cretaceous beds of Kreischerville and the moraine in other parts of the Island may possibly be further supplemented and extended, especially in view of the fact that the Tertiary sands and gravels of Todt Hill and vicinity have yielded fossil vegetable remains, as recorded by Dr. Hollick.

RECENT LITERATURE RELATING TO TO STATEN ISLAND.

Staten Island Academy. N. Y. Tribune, Supplement, Jan. 28th, 1900. An illustrated historical sketch of the Academy, with cuts showing view of the exterior from the corner of Wall street and Stuyvesant place and three of the interior.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VII. No. 18.

JUNE 9th, 1900.

The regular meeting of the Association was held at the residence of Mr. J. Blake Hillyer, New Brighton.

In the absence of the president Mr. A. K. Johnston was elected chairman *pro tem*.

The following paper by Mr. Ira K. Morris was read:

THE TOMPKINS LYCEUM.

After a persistent effort, covering possibly two or three years, the Tompkins Lyceum was organized on Tuesday, January 11th, 1842. A public meeting was held at Tompkinsville, at a house "formerly known as the New York House, for the purpose of establishing a Village Lyceum and Library."

The Rev. John E. Miller, (pastor of the old Dutch Reformed Church), presided at this meeting, and George Catlin acted as secretary. At this meeting a committee, consisting of Rev. John E. Miller, Rev. William Walton, William S. Root, Francis L. Hagadorn, John M. Nixon, George Catlin and Archibald Gordon, was appointed to frame a constitution, and report on the next Tuesday evening.

This adjourned meeting was held on Tuesday, January 18th, at the same place, when the committee reported the constitution, which was unanimously adopted, and the meeting adjourned for one week.

On January 25th, the Association held its first annual meeting, and elected George Nixon, Samuel Barton, William Emerson, Francis L. Hagadorn, Thomas Standerwick, William Walton, Archibald

Gordon, William S. Root and John M. Nixon directors for the ensuing year.

On Thursday, January 27th, the Board of Directors held its first meeting and elected the following officers: George Nixon, President; Samuel Barton, Vice-President; William Emerson, Corresponding Secretary; Francis L. Hagadorn, Recording Secretary; Thomas Standerwick, Treasurer.

On January 31st, 1843, the Board of Directors adopted by-laws, which provided for regular monthly meetings on the second Monday evening of each month. The price of shares in the capital stock of the corporation was five dollars each, and the annual dues two dollars.

The Trustees were empowered "from time to time, to admit to the privileges of the library and to the lectures, for a period of not more nor less than one year, any share-holder at the rate of three dollars per annum."

Of special interest to us were the following provisions in the by-laws:

"In addition to the officers required by the statute, there shall be one Curator of Natural History, one Corresponding Secretary, and one Recording Secretary,"

"The Curator of Natural History shall have control over the arrangement and exhibition of all the curiosities and specimens in Natural History, presented to or deposited with the Lyceum."

Article IX. of the by-laws provided as follows:

"There shall be members of the Tomp-

kins Lyceum, distinct from the shareholders, designated as honorary and corresponding members.

"Honorary members may be chosen by the Trustees, from such as are distinguished for their attainments in literature, art or science, or such as have conferred any signal benefit on this incorporation."

In February, 1843, for some reason, unknown to the writer, the affairs of the Association began to drag, and meetings were held without the transaction of any important business, and "finally adjourned without date."

From the first annual report we also learn that "the rooms now occupied by the Lyceum have been hired for a year at one hundred and twenty dollars."

"The Librarian, Mr. Theodore Freen, has been employed to attend at the rooms daily, from four to nine o'clock p m., at one hundred dollars per annum, from the first of February, 1842."

"Mr. Joseph Taylor has also been employed as a collector of dues at five per cent., and to attend at the door of the Lyceum on lecture nights at fifty cents each night."

"The Library now consists, (1842), of 990 volumes, all of which, with the exception of the 45 volumes embraced in the Christian Library, have either been presented by donors or deposited with and loaned to the Lyceum for its use. Among the many valuable articles which have thus been deposited with the Lyceum, the Directors take occasion especially to acknowledge a fine portrait of Daniel D. Tompkins, painted by Jarvis, and deposited by the Hon. Minthorne Tompkins."

The compliment of honorary membership was conferred upon the Hon. Minthorne Tompkins, Rev. Orville Dewey, and James Pierce. Charles M. Wheatley, of New York, was elected a corresponding

member.

According to the report of the Treasurer, up to February 23d, 1843, besides a donation of an entire set of Harper's Family Library, there had been received: From members' dues and fines, \$296.32; from lectures, \$36.27; donation from C. Vanderbilt, \$40.00; donation from C. Miller, of Albany, \$5.00.

From the annual report of 1843, we quote:

"In this report the Directors are necessarily limited, but they cannot refrain from congratulating the members upon the success of this institution. Formed in a small village, and overlooked by the giant and flourishing institutions of the Metropolis of the New World, it has been able to secure for itself favor, even from among those who had the most ample opportunity of communing with the city libraries and availing themselves of the attractive lectures which kindred institutions in the city have such superior facilities for producing. Yet the local pride and patriotism of the people of this village and its vicinity have been sufficient to overcome all the obstacles which were incidental to our experiment, and we now have an institution which the Directors feel the highest pride in asserting to be a credit to its members and an ornament to Staten Island."

The Tompkins Lyceum was incorporated on March 19th, 1844. The officers that year were as follows: John S. Westervelt, President; Francis L. Hagadorn, Corresponding Secretary; G. W. Wheeler, Recording Secretary; George A. Osgood, Treasurer; W. C. Anderson, Curator of Natural History; Archibald Gordon, Chairman Library Committee; D. B. Allen, Chairman Finance Committee; W. S. Root, Chairman Lecture Committee; Jacob H. Vanderbilt, George Catlin, Albert Ward and A. C. Miller, Trus-

tees.

The Tompkins Lyceum flourished, more or less, for a number of years. The building which it eventually owned and occupied stood on the corner of Richmond Road and Prospect Street and was subsequently remodeled into the German Club house.

Many of the books and pictures once the property of the Lyceum are still to be found in Tompkinsville and Stapleton homes.

RECENT LITERATURE RELATING TO STATEN ISLAND.

Observations on a Woodland Fire. Wm. T. Davis. *The Plant World*, Vol. III,

(Jan., 1900) pp 4, 5. Notes on the effects of a fire in the woods near Oakwood station in the autumn of 1892, with records of the vegetation which appeared on the completely burned areas during the succeeding seven years. *Ambrosia artemisiæfolia* L. (Rag weed) was the first plant to gain a foothold, but finally this gave way to several native species, amongst which were *Potentilla Canadensis* L., *Aster Novæ-Angliæ* L., *Solidago rugosa* Mill. and *S. lanceolata* L.

Historic Farm Houses. *Mail and Express Illustrated Saturday Magazine*, June 9th, 1900. An excellent picture and brief account of the Bilop House at Tottenville.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION,

OF STATEN ISLAND.

VOL. VII. No. 19.

OCTOBER 13th, 1900.

The regular meeting of the Association was held at the residence of Mr. Thomas Craig, New Brighton.

In the absence of the president and secretary Mr. E. C. Delavan and Mr. Thomas Craig were elected respectively chairman and secretary *pro tem*.

Mr. Herman Kobbè, New Brighton, was elected an active member.

Mr. William T. Davis referred to the recent death of Dr. Frederick Hollick, one of the earliest members of the Association, and, on motion, a committee was appointed to prepare a suitable minute for insertion in the records. The following was subsequently prepared:

Frederick Hollick, M. D., was born at Claverdon, England, December 21st, 1818, and died at New Brighton, August 17th, 1900.

He came to America in 1842, and after traveling extensively through the States, settled on Staten Island, where he resided until his death.

His studies in natural science and medicine were begun at the Mechanic's Institute and were continued at Queen's College, Birmingham, England, but it was not until he came to this country that he received the degree of M. D., from the Physio-Medical College of Cincinnati, Ohio.

His earlier activities were in the line of popular lectures on social and political questions and later on physiology and anatomy, in which latter connection he became widely known throughout the United States and built up a large practice as a consulting physician. He also wrote a number of popular works on physiology, one of which, "The Marriage Guide,"

has passed through 300 editions and yet commands an extensive sale. His last and most comprehensive work, "The Origin of Life," was revised and issued in its new form in 1878. These books were also translated into Spanish.

Dr. Hollick was always actively interested in scientific subjects, especially in local natural history, and it was largely due to his initiative that this Association was formed. He was one of the three persons who, in 1881, prepared a list of names of those whom it was thought might be interested in starting a scientific society in this community and he was one of the first to encourage and aid the Association when the organization was effected.

Although unable, on account of poor health, to attend the meetings, he always maintained an active interest in our work and contributed from time to time a number of memoranda for the Proceedings, especially in relation to our local flora.

Mr. William T. Davis, on behalf of the committee appointed to consider the matter of the duplication of names in many of our streets and roads, presented a partial list of such duplications, with suggestions for suitable renaming.

On motion the paper was accepted as a report of progress and the committee was requested to further consider the subject and to report at a subsequent meeting.

The following paper, by Mr. Ira K. Morris, was read:

DESTRUCTION OF AN OLD LANDMARK.

About six weeks ago another incendiary fire partially destroyed the

old building, on Richmond terrace, that belong to the past.

New Brighton, which for many years was the home of one of the most distinguished officers of the United States Navy. I refer to the Sloat mansion, now the property of ex-County Clerk Cornelius A. Hart.

The house was erected at a time when the New Brighton Association was doing so much for the North Shore of Staten Island, by inducing families of wealth and reputation to come here and make the place their home. It was originally erected back in a period when Staten Island was almost strictly a residential quarter, and when its natural beauties were so greatly admired by a class of wealthy people who desired to live in retirement. From time to time additions were made to the structure until it became quite large, its architecture being principally of the southern style.

There are few buildings on Staten Island, built during the present century, that have been the scene of more important social events than the old Sloat mansion. Admiral Sloat was a great entertainer, and delighted in having his friends from all parts of the globe sitting at his hospitable table, or at his open fire-grates in winter, or on the broad piazzas in summer.

Our older citizens well remember the dignified old officer. He took a great interest in the affairs of the Island, and made himself felt as a useful citizen and a member of the common community. Popular as a naval officer, a United States war vessel seldom came into the Port of New York, but that its officers visited "the Admiral" in his New Brighton home. To very many, the old house, now charred and mutilated, probably beyond redemption, recalls many happy memories of days and events

John Drake Sloat was born in New York City, in 1780, and entered the United States Navy as sailing master, in 1800. In the war of 1812, he was in the engagement between the famous war vessels "United States" and "Macedonian." He participated in the expedition against the West Indian pirates, in 1824-'25, and commanded the Pacific Squadron from 1846 to 1852, rendering services which aided very materially to make California a State in the American Union.

Later he was commandant at the Norfolk Navy Yard, and finally superintended the building of the famous Stevens Battery, at Hoboken. He retired from active service with the rank of commodore, in 1862, and was promoted to rear-admiral in 1866. He died in 1867.

Admiral Sloat gave several years to the work of building the Stevens Battery. The owner of it, Edwin K. Stevens, a wealthy resident of Hoboken, New Jersey, endeavored, at the beginning of the Southern Rebellion, in 1861, to induce the Government to make use of the iron-clad battery, which had been begun by Robert L. Stevens, but the offer was declined.

Edwin then left in his will one million dollars for the completion of the battery, but that amount was insufficient, and it was sold to the United States in 1874, by the State of New Jersey, to which it had been bequeathed. Congress, however, neglected to make the appropriation, and the vessel was sold in 1880, for a very small amount.

We have it on good authority that Admiral Sloat did a great deal of the work, in company with his assistants, in the once neat old mansion at New Brighton. It was his pride to make

the Stevens Battery a very "useful ornament" to the United States Navy.

RECENT LITERATURE RELATING TO STATEN ISLAND.

1. *Report upon New York's Water Supply*, etc. made to Bird S. Coler, Comptroller, by John R. Freeman, Civil Engineer. March 23, 1900; 8 vo, cloth, pp 587 and 113 maps, plates and diagrams.

This report deals with the question of water supply for the entire area of Greater New York, including Staten Island. In Appendix No. 15, pp. 547-552, the sources of supply for the Island are discussed, and in Appendix No. 16, pp 573-581. there is a special report by W. O. Crosby, ("Outline of the Geology of Staten Island in Relation to the Public Water Supply") in which the author acknowledges his indebtedness to certain members of our Association for the principal part of his information.

So far as Staten Island is concerned it is of interest to note that the conclusions are entirely in accord with those previously reached by our local students of the subject, as may be seen by reference to the papers which have been read from time to time before the Association [Proc. Nat. Sci. Assn. S. I., Dec. 12th, 1891; Feb. 9th, 1895; Oct. 8th, 1898.]

Thus, in regard to the sanitary aspect, the report says: "The present sources appear already taxed to the safe limit and appear liable to such pollution as the Island becomes more thickly populated, that they may ultimately have to be abandoned."

In discussing the future supply the statement is made, without qualification, that: "The outlook for securing good water in adequate quantity upon the Island itself is utterly hopeless, and it is plain that the supply which the near future demands must come

from the mainland and that it can be most cheaply brought across 'The Narrows from Brooklyn.'"

Such a scheme would necessitate a large receiving and distributing reservoir and to those who are interested in the Silver Lake Park project the following paragraph from the report may appear significant: "There is, from surface indications, and so far as one can judge without numerous test pits and borings, an excellent site for the reservoir, of any desired capacity, between the hills at or near the site of Silver Lake. The surface soil appears to be remarkably impervious, as is indeed shown by the existence of this pond."

The fallacy of this reasoning is of course apparent when the shallowness of the water is considered (maximum depth=about 16 ft. See Gratacap, Proc. Nat. Sci. Assn. S. I., Sept 13th, 1884,) and also from the fact that when the water reaches a certain level it disappears by subterranean seepage, instead of rising high enough to overflow by surface drainage. The geological structure of the Island is represented areally and in section in figs. 111 and 112 and the structure is briefly discussed, together with the known and probable water horizons, with the final conclusion that the conditions are everywhere unfavorable for the flow and storage of sub-surface water and that all such water is dependent upon the local rain fall.

In describing the Clove Valley the author introduces a theory which has not been brought forward by our local geologists and which is worthy of careful thought and investigation, viz: "The Clove Valley is, everything considered, a somewhat remarkable topographic feature, the origin of which is probably to be sought in a stream flowing southeasterly across

this area at a time when the serpentine hills were covered by the Cretaceous and Tertiary sediments * * * As this ancient stream cut down through these sedimentary deposits it encountered the resistant serpentine, into which, stimulated by a considerable fall due to the erosion of the sedimentary formations southeast of the serpentine hills, it cut a straight, narrow notch or gorge. Subsequently, when the land stood higher than now, the head waters of this hypothetical stream were, probably, drawn off by some lateral tributary of the Hudson, perhaps in the line of Kill van Kull, the downward progress of which was not retarded at so high a level by contact with the head rocks "

11. *Geological Survey of New Jersey. Annual Report of the State Geologist for the Year 1899.*

In the report upon artesian wells, by Lewis Woolman, may be found the following records of wells on Staten Island:

P. 132. "Boring at New Dorp, Staten Island, N. Y., for Charles F. Schmeidt.

"Earth.....28 feet = 28 feet
"Soapstone, soft [serpentine] 572 feet
"= 600 feet.

"No water.

"Bored well at New Dorp, Staten Island, N. Y., for William Arndt.

"Sand and gravel.....85 feet

"This well produces 10 gallons a minute at 68 feet from the surface."

P. 138. "Well on Shooter's Island,

"Southern End of Newark Bay and

"Near Elizabeth.—Depth 200 feet.

"For the firm of Townsend &

"Downey we sunk a well 200 feet deep,

"55 feet to rock, and met with very

"peculiar strata, consisting of beds of

"a yellow, hard rock, interspersed with

"layers of black slate. We drilled to a

"depth of 200 feet, but found no water.

"(These are probably the metamor-

"phosed shales overlying the Palisade

"trap sheet.—H. B. K.)"

MINOR NOTES AND MEMORANDA.

Mr. William T. Davis exhibited specimens of *Rudbeckia speciosa* Wenderoth, from Tottenville, a species new to the local flora. Also a specimen of *R. hirta* L., with the disk green instead of brown.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND,

VOL. VIII. No. 12.

FEBRUARY 8th, 1902.

The regular meeting of the Association was held at the residence of Mr. Fred F. Hunt, New Brighton. In the absence of the president Mr. J. Blake Hillyer was elected chairman *pro tem*.

Mr Wm R. Hillyer, New Brighton, was elected an active member.

Mr. Wm. T. Davis called attention to a movement, recently inaugurated by persons interested in plant life, designed to check and discourage the wholesale destruction to which vegetation in general is exposed by the wanton or thoughtless plucking and collecting of flowers and the breaking of shrubs and trees. New England botanists have formed a "Society for the Protection of Native Plants" and the New York Botanical Garden has received a "Fund for the Protection of Native Plants," the income from which is to be devoted to three prizes of \$50, \$30, and \$20, each, for the best essays upon the subject of the preservation of wild plants, including shrubs, herbs and trees.

Mr. Davis then read the following

LOCAL NOTES ON VANISHING WILD FLOWERS.

The State of Connecticut has a law designed to protect its native flora. In the city of Boston there is a "Society for the Protection of Native Plants," and lately the New York Botanical Garden has been presented with a fund, the interest of which is to be used for the same admirable purpose. The preservation of living plants in their native haunts has naturally received much attention in botanical journals, and the daily press has also done its part in serving notice upon the public, that they who ruthlessly pluck, dig up or burn the wild plants, are doing the commun-

ity an injury. Of course in every locality the conditions are somewhat different. The plants that are in danger of extermination in one place may be abundant in another. For this reason Mrs. N. L. Britton, whose article on "Vanishing Wild Flowers," published in *Torreya* in August last, has suggested that some notes of a local character could be given for Staten Island.

The chief destroyers of our local flora seem to be:

1. Fire
2. Agriculture, building operations, and the wood chopper.
3. Cattle
4. Indiscriminate picking of flowers.

The crowds of passengers on the Staten Island boats on Sundays and holidays in warm weather, bear away such enormous bouquets, that the wonder grows that there are any flowers left alive except daisies and golden rods, whose floral display can hardly be reduced by the energy of even the most vigorous east side picnic party.

The fern *Polypodium vulgare* though common enough northward, is rare on the Island, and is here a subject for protection. It once occurred in considerable abundance on the top of a flat rock near Four Corners, but a number of cows were turned into the wood and they speedily devoured the ferns along with much of the underbrush. The other stations for this fern, at Silver Lake, etc., have so often been burned over that it has been nearly exterminated. The burning of our woods year after year, has also destroyed most of the patches of Club-mosses, and some of the spe-

cies that were abundant a few years ago could now hardly be found.

The lilies, especially the Turk's cap (we have very few Canada lilies), seem to suffer chiefly from the individual intent upon making a bouquet the size of a bushel basket. Their own conspicuousness is their chief enemy, as it is with some other plants; when man is taken into account.

We have known of many little patches of orchids, such as *Tipularia* and the moccasin flower, that have been destroyed by fire, and we have seen localities picked clean of the flowers of the last named species. We once saw three children vying with one another as to who could collect the greatest number of moccasin flowers and the biggest bouquet of azaleas.

The wild columbine is nearly extinct on the Island, there being still a few plants at Tottenville. Probably all of the destroying agents mentioned helped in the reduction of its numbers.

The Hepaticas suffer much from the constant wood fires, and all of the flowers in sight are often plucked.

The erect Clematis (*C. ochroleuca*) on Todt Hill and on the sandy point of land at Watchogue, is one of the plants that should be saved in particular, for the reason that it is at present unknown elsewhere in the vicinity of New York. It is not reported from the whole State of New Jersey. The Country Club as tenant, and the president of our Borough as owner of the soil on Todt Hill, is each in a position to save it to the community.

The evergreen holly used to be abundant on the Island, and there were trees of good size, on Richmond hill. But, 'if I don't take it some one else will', was the motto of the neighbors, and every Christmas time saw it grow less. Until lately there were many little trees springing up on the hill, but last year the underbrush was cleared away and the ground burned over.

The flowering dog wood suffers from having many of its branches broken off in May and June, and lately some one cut most of

these trees from the woods on the westerly side of Silver Lake; land which will perhaps some day be included in the proposed park.

Trailing arbutus used to grow in abundance near Huguenot and Richmond Valley, but it has literally been carried away. In several instances it has been destroyed by fire as well. When one considers how difficult it is to make the arbutus grow, in fact no one has been entirely successful in transplanting it to any extent, it will be realized that it is easier for man to build a sky-scraping office building, or some other considerable monument of engineering skill, than it is to readjust the nicely balanced conditions of nature, when they have once been destroyed.

I have seen a swamp burn on our Island for a week, the result of a careless fire, and at the end of that time more damage had been wrought to nature than could be repaired in probably several centuries of growth and decay. What then is to be done to save our wild flowers and plants? The answer would seem to be that nothing can be done except in the way of educating popular opinion and taste,

No doubt one of the most effective ways of doing this would be to bring the matter to the notice of the teachers in the public schools, when the enormity of setting fire to the woods and of pulling up and indiscriminately picking all of the wild flowers could be explained to the children and thus teach them a reverence for things natural.

On motion Mr. Davis was requested to obtain further information in relation to the subject and to report at the next meeting any suggestions in regard to work which might be undertaken in order to assist or encourage the movement.

Mr. Davis also exhibited specimens and read the following memoranda:

TWO ADDITIONS TO THE LIST OF STATEN ISLAND PLANTS,

Hypochaeris radicata L. This composite is well established on the Island, having been found at three stations. In the grounds

of the S. R. Smith Infirmary it persists in spite of the mowing machine. It is also to be found on Todt Hill, and in a field near Egbertville it grows in great abundance.

An interesting habit of the plant is the closing of its flowers early in the afternoon, even if the sun is shining. I am indebted to Dr. N. L. Britton for verifying my identification of the specimens.

Taraxacum erythrospermum Andr. (Red-seeded Dandelion). The specimens of this plant exhibited were collected on the side of the Egbertville road near Egbertville. It has however been found growing in some abundance in the trap-rock quarry at Graniteville.

In the first locality it grows in the deep shade, but in the quarry it is associated with the Knawel and occupies, as that plant generally does, a dry exposed situation.

THE BAG OR BASKET WORM,

Mr. Fred F. Hunt referred to the injury to shade trees wrought in recent years by the "bag" or "basket worm" (*Thyridopteryx ephemeraformis* Haworth) and exhibited specimens of the species in all stages of growth, together with its cocoons. These latter may be seen in great abundance this winter, suspended from the branches of many trees in the vicinity. Mr. Hunt suggested that some action might be taken by the Association to assist in abating or mitigating the nuisance by urging property owners to remove and destroy the cocoons now, while they may be readily seen, and thus prevent the eggs from hatching next Spring.

The following letter from Mr. Walter C. Kerr, relating to the matter was read :

New York Feb, 7, 1902

Fred F. Hunt, Esq., New Brighton, Staten Island, N. Y.

Dear Mr. Hunt :—Referring to our conversation this morning about the bag worm cocoon which so abundantly infests the trees on Staten Island this winter I would say that I most heartily approve of your suggestion that the Natural Science Association take

some move towards their destruction before Spring providing a practical method can be planned for effecting this.

I am quite sure that such moves are only worth making when they are efficient and reasonably complete. In this case completeness could not extend to the forests of the Island but there seems no good reason why it should not extend to all of the shade trees and other valuable trees well within the settled portions especially the trees which extend along the streets and lawns.

Doubtless personal effort is most effective, but I believe it to be too limited. In making such a move against the threatened plague of the coming season the following occurs to me:

1. Strong words of warning, put in language that will be understood and which will plainly state that these trees are threatened with destruction if this remarkable crop of cocoons is not handled now, should be put in the papers, not only once but repeated again and again, to keep it before the public and the papers should be requested to draw editorial attention to the articles.

2. A very simple cheap circular might be printed and by a special permit of the Post Office Department be placed in every mail box on the Island without addressing. This I think the Department would permit, although contrary to custom, because of its being for the public good. These circulars to be sent to each of the postmasters in packages with instructions how to deliver them.

On these circulars might be printed a small half tone cut showing just what the cocoon is, so that comparatively ignorant people will understand

3. Some practical means should be suggested for removing the cocoons, for obviously their removal must be accomplished by some means commensurate with their number and distance from the ground. Possibly by a sharp hooked knife attached to the end of a long stick which would reach most of the low trees to which these cocoons are chiefly

attached or possibly a wire in the end of a long pole, with the end bent over at an angle and hammered into a sharp V shape could be hooked over the cocoon in such a way as to easily pull it down.

4. Explicit instruction should be given that the cocoons when thus removed should be collected and burned.

5. Possibly it would be well for the Association to consult with the U. S. Department of Agriculture, Division of Entomology, or the nearest Agriculture Station of this Depart-

ment (which probably is at Cornell University) asking advice regarding the best methods.

In any event, I think whatever is done must be of such a nature as shall alarm the people as to the menace which these cocoons are to the shade trees and insure a practical mode of dealing with them.

On motion, Mr. Hunt was requested to communicate with the proper State and National institutions or departments, asking for advice on the subject, and to report at the next meeting.

COLONEL FRANCIS LOVELACE

—AND—

HIS PLANTATION ON STATEN ISLAND

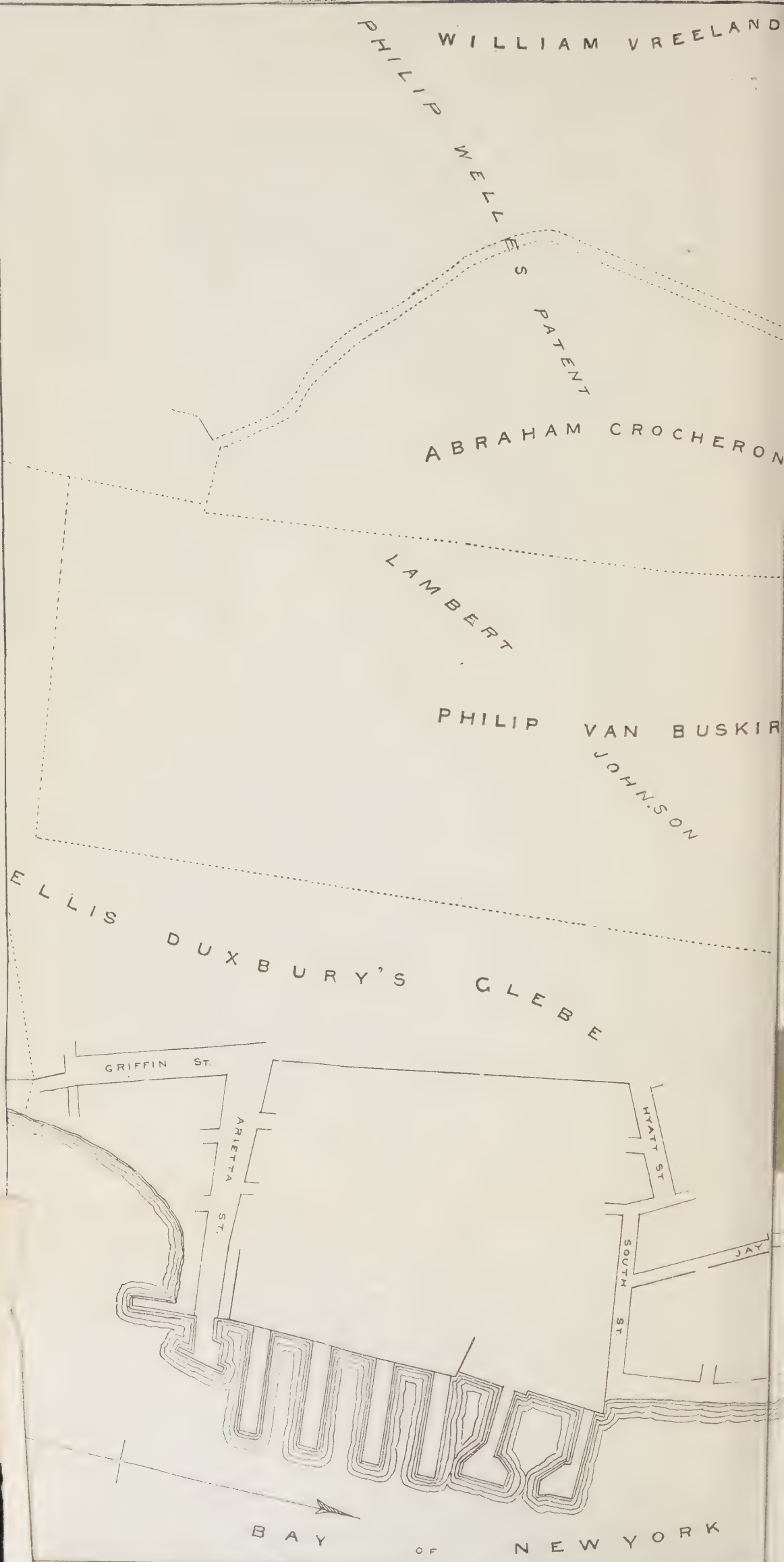
By EDWARD C. DELAVAN, Jun'r.

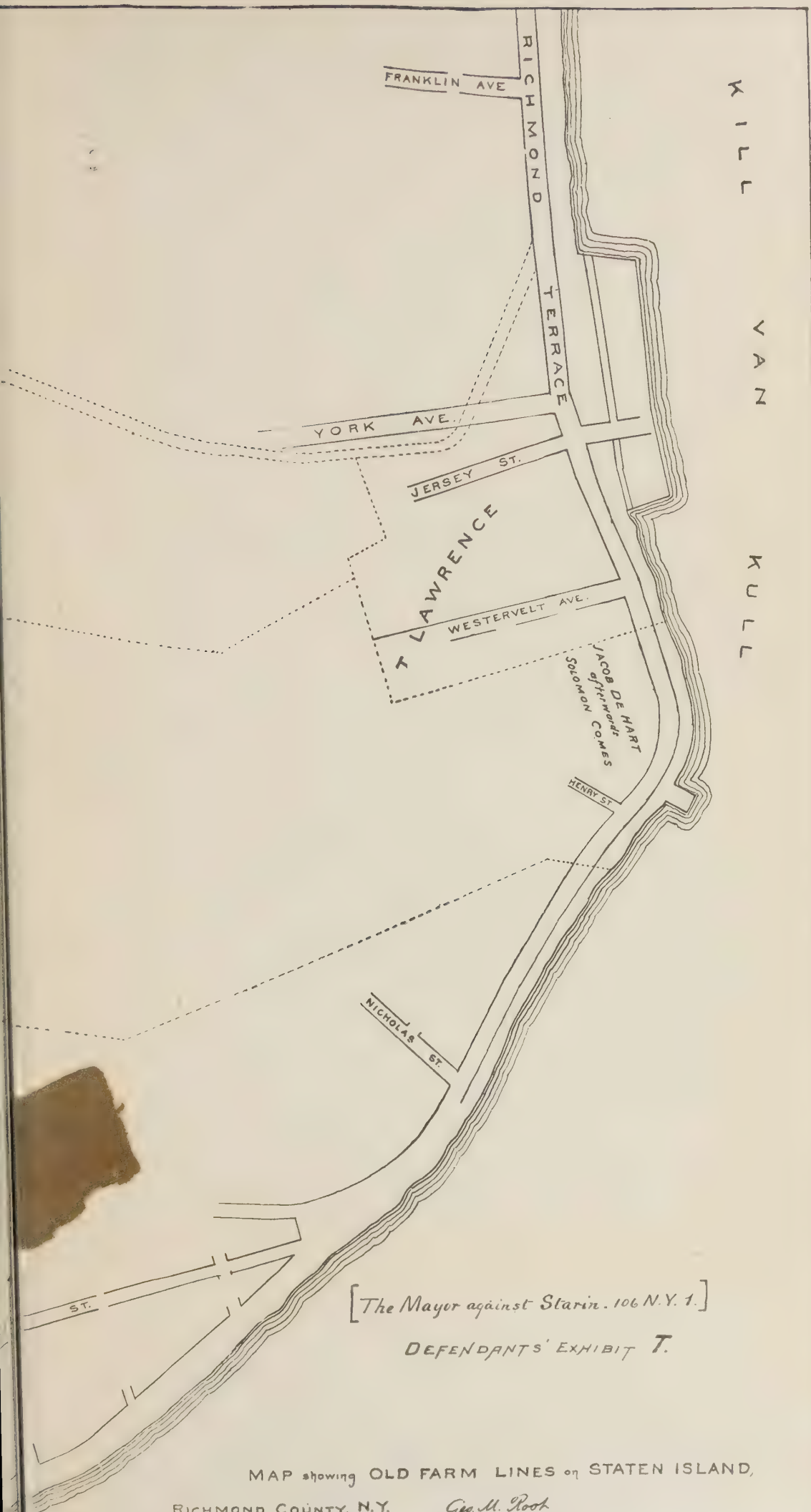
PUBLISHED BY THE
NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND
NEW BRIGHTON, N. Y.

Price Fifty Cents.

1902.

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SCALE 300 FEET TO ONE INCH.

[Reduced from the original. Scale = about 337 feet to one inch.]

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

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VOL. VII. NO. 15. (Special No. 22.) MARCH 10th, 1900.

COLONEL FRANCIS LOVELACE

AND

HIS PLANTATION ON STATEN ISLAND.

By EDWARD C. DELAVAN, Jun'r.

I.

The Minister Church Wardens and Vestry of Saint Andrew in the County of Richmond, under a devise contained in the last will and testament of Ellis Duxbury, deceased, went into possession of a tract of land upon Staten Island for which he and his wife Mary, in her right as the niece of Mr. Thomas Lovelace, after a long struggle, had obtained a patent from the Crown.

After the death of Ellis Duxbury this tract became known as The Glebe. (See Beer's Atlas of Staten Island, 1874, Plates 4 and 8; based upon a map entitled "Map of Edgewater and Part of New Brighton Staten Island New York Showing old Farm lines Streets Avenues Lots &c From actual surveys by George M. Root, August 1866", a copy of which is deposited in the Richmond County Clerks Office.)

The tract so known formed the north-easternmost portion of Colonel Francis Lovelace's plantation on Staten Island, which extended westerly along the Kill von Kull at least as far as Palmer Run, and included a tract once in possession of Capt. Dudley Lovelace.

Francis Lovelace's fortunes were ruined by the surrender of the Province of New

York to the Dutch. Upon the restoration of British authority his plantation was retaken by the Duke of York, who granted some parcels thereof to various persons, through Gov. Andros, and the remainder, excepting a tract occupied by Mr. Thomas Lovelace and here referred to as The Glebe, was granted to John Palmer, who conveyed it to Thomas Dongan.

Capt. Dudley Lovelace is mentioned as a commissioner to grant lands at Hurley, in Ulster County, and otherwise. (2 *Brodhead's History of The State of New York*, 167, 184; 13 *Documents Relating to the Colonial History of The State of New York—Col. Doc.—*401, 443 *et seq.*; 452, 462.)

Mr. Thomas Lovelace was active in the affairs of the province during Governor Francis Lovelace's administration and served as sheriff of Richmond County during the year 1684-5. (2 *Bryant's History of The United States*, 1st edition, 345; 2 *Brod.* 172, 188, 206, 207; *Civil List of The State of New York*, edition of 1886, 312, 463; 12 *Col. Doc.* 486; 14 *id.* 639.)

The relationship of Francis, Dudley and Thomas Lovelace does not clearly appear. Francis, the Governor of the

Province of New York, is said to have been the son of John, Lord Lovelace, Baron of Hurley; (34 *Dictionary of National Biography*, 166; *Appendix, Part 1, post, p. 58 et seq.*), which statement has been questioned. (2 *Wilsons Memorial History of The City of New York* 96; *post p. 59.*) Captain Dudley Lovelace is referred to as the brother of the governor. (13 *Col. Doc.* 447.) So also is Mr. Thomas Lovelace. (2 *Mem. Hist. C. N. Y.* 96.) The subject of the Lovelace pedigrees requires re-examination.

The scope of this paper is intended to include all patents for land within the limits of late Village of New Brighton and the northern part of the late Village of Edgewater.

Papers published in Volume VI. of the Proceedings of the Natural Science Association of Staten Island, pages 28 and 31, show the grants of land upon Staten Island made by Colonel Richard Nicolls, the first English governor of the Province of New York.

Nicolls was succeeded by Col. Francis Lovelace in 1668. (2 *Bryant*, 336; 2 *Mem. Hist. C. N. Y.* 336; *post p. 58.*) On August 28th of that year the latter wrote to Lord Arlington that he was now " * * * invested with the charge of His Royall Highnes territories, being the middle portion of the two distinct factions, the Papist and the Puritane." (3 *Col. Doc.* 174.)

For the importance and general bearing of this allusion, the reader is referred to the introduction to Macaulay's History of England.

On April 13, 1670, certain Indians joined in a deed conveying Staten Island to Governor Francis Lovelace. (1 *Land Papers* 34; 13 *Col. Doc.* 455.) The Island had been previously conveyed by the Indians to Lubbertus van Dincklage, attorney for his Noble Honor Hendrick

van der Capellen tho Ryssel, (14 *Col. Doc.* 393) and it may be that prior grants or concessions had been made by the Indians to Cornelis Melyn, (See 1 *Col. Doc.* 144, 348) to David Pietersen de Vries (See *post p. 50*) and to Michael Pauw. (See 13 *Col. Doc.* 2.) The Indian inhabitants of Staten Island are said to have disappeared prior to 1675. (14 *Col. Doc.* 706.)

Governor Lovelace on July 22nd, 1672, directed Mr. Andrew Norwood, Capt. Dudley Lovelace and Mr. Robert Ryder to take a survey of Staten Island, with its dimensions and circumferences, to lay the same down upon a plat and make return thereof to him. (13 *Col. Doc.* 466; see *id.* 518.)

On the 5th of the following September there was filed a description in Dutch of a survey of Andrew Norwood's land, containing 150 acres. (1 *L. P.* 47.) This was followed by a patent (3 *Patents* 113; *post p. 60*) wherein the land granted is described as bounded on the north side upon land of Capt. Dudley Lovelace, near the Watering Place. (14 *Col. Doc.* 506.) The grant to Capt. Dudley Lovelace is again referred to in 4 *Patents* 109.

A Dutch fleet entered New York Bay on July 27th, 1673, (2 *Brod.* 206) and the ships companys breakfasted on Governor Lovelace's sheep and cattle on Staten Island, as he wrote to Governor Winthrop of Connecticut. (3 *Col. Doc.* 198.) New York was surrendered. (2 *Bryant* 347.) For a full documentary history of the second Dutch administration, see "Minutes of the Administration of Commanders Evertsen and Benckes, and of Anthony Colve, Governor of New Netherland, 1673, 1674. (2 *Col. Doc.* 569 *et seq.*)

Colonel Francis Lovelace, the late Governor, was arrested for debt and his property was confiscated. (2 *Bryant* 350;

3 *Narrative and Critical History of America*, 395; 2 *Brod.* 214; 2 *Col. Doc.* 611; 3 *Col. Doc.* 205.)

At a meeting of the Commanders and Honorable Council of War of New Netherland, held in Fort William Hendrick, August 21st, 1673, "James Grover, making known that he hath in hands on Staten Island a Water Mill belonging to Mr. Lovelace, on which work he has, he says, received 10 pounds sterling, requests order what further is to be done. Whereupon he is allowed to proceed with the work according to the contract." (2 *Col. Doc.* 580).

On October 11th, 1673, Colonel Francis Lovelace was ordered to depart forthwith out of New Netherland; he sailed on Commander Bencke's ship (2 *Col. Doc.* 603; *see id.* 579) and on March 2nd and 9th, 1675, was examined before a committee, appointed by the King to inquire into the surrender of New York. (*Post*, p. 59).

Commissioners had been appointed by the Dutch Council to administer upon Lovelace's confiscated estate (2 *Col. Doc.* 587, 651, 667, 672, 720), and Mr. Cornelis van Ruyven, the receiver, charged himself on June 15th, 1674, with a balance of fl. 41, 618.9. (2 *Col. Doc.* 721). This account passed into the control of the succeeding English administrations and does not seem to have been closed until January 21st, 1679, prior to which time Colonel Francis Lovelace had died. (XXVIII *Colonial Manuscripts*, 50. *State Library, Albany*). Had he been privileged to conduct his own affairs for a time longer, he might not have been found in debt to the Duke of York or to any other person.

Dudley Lovelace was sent to Europe (2 *Brod.* 213), and Thomas Lovelace was ordered to leave the province, but succeeded in delaying the execution of the order until the peace between England and

Holland left him free to remain in the land of his adoption, as appears from the following extract from the minutes of the Dutch Council:

"At a Council, Thursday, the first of
"March A^o 1674.

"Present

"Governor-General Anthony Colve

"Counciller Cornelis Steenwick

"Mr. Cornelis Van Ruyven and

"Secretary Nicolaes Bayard.

"* * * * *

"* * * * *

"On the petition laid before the Council
"on behalf of Thomas Lovelace, it is, after
"question was put, ordered as follows:

"The time fixed for the petitioner's departure from the Province within 6 months, is further extended for the space of three months; but since the requested Bouery is already leased, he must provide himself with another residence; in regard to the requested piece of land, if it be surveyed, he shall procure the Surveyors notes of the survey and lodge the same in the Secretarys office; furthermore, the Petitioner is allowed to dispose, at his pleasure, of the goods belonging to him personally; respecting the carpentry work applied for, Petitioner is referred to Schout Billjouw, to prove to him that the same was paid by the Petitioner, when he shall obtain satisfaction therefor if any of said carpentry work be judged suitable for raising a new house on the plantation, or else he may remove the same; furthermore the two requested horses are allowed and granted to the Petitioner and the Schout is required to let him have them; finally, the Petitioner's last request about the cows will be taken into further consideration.

"* * * * *

"* * * * *

(2 *Col. Doc.* 692, 694).

Was the "requested Bouery" the bowery of de Vries referred to in the following Dutch grant, and did it include the Glebe?

GRANT OF STATEN ISLAND TO CORNELIS
MELYN.

"We, *William Kieft*, Director-General, "and the Council of New Netherland, etc., "etc.

"Make known, that this day, date as below, we have conceded and granted, as "we herewith concede and grant (under "authority of an edict, issued by the "Honble Lords Directors on the — day "of July 1640) to *Cornelis Melyn* the "whole of *Staten Island*, situate in the "Bay of the North River of New-Netherland, except as much land as is necessary for a bouwery, which had been "granted by us, the Director-General and "Council before the publication of the "above said edict, to *David Pietersen de Vries* from *Hoorn*, and of which land "*David Pietersen de Vries* has already "taken possession; with the express condition, that he, *Cornelis Melyn*, or his "successors shall acknowledge the Honble "Lords-Directors as his supreme authority "under the sovereignty of Their High: "Might: the States-General and obey here "their Director-General and Council, as "good inhabitants are bound to do; provided that he, *Melyn*, or his successors "submit to and acknowledge in every respect all such burdens and taxes, as have "been already or may hereafter be imposed "by the Lords-Directors according to the "Exemptions of *New-Netherland*. We constitute therefore the aforesaid *Cornelis Melyn* in the place and power, that we "had before over the land, giving him actual and real possession of it and full "power, authority and special permission "to enter upon, cultivate, inhabit and use "the aforesaid *Staten-Island*, as he would "do with his other inherited lands and

"effects, without reserving or retaining for "us any claim or pretension thereon." (No date. 13 Col. Doc. 6).

"Tradition says that one of the first dwellings on the Island was situated on the heights at New Brighton, and was constructed of bricks imported from Holland, and occupied, for a time, by a prominent official of the government. If there is any truth in the tradition, the house was probably the residence of de Vries * * * (Clute's *Annals of Staten Island*, 31).

Thomas Lovelace had occupied the land lying at the Northeast point of Staten Island since about 1669. (3 L. P. 69; *post*, p. 75).

The location of the requested piece of land, the surveyor's notes of the survey of which Thomas Lovelace was directed to procure and lodge in the Secretary's office, is fixed by the following entry:

"At a Council, 18th April, 1674.

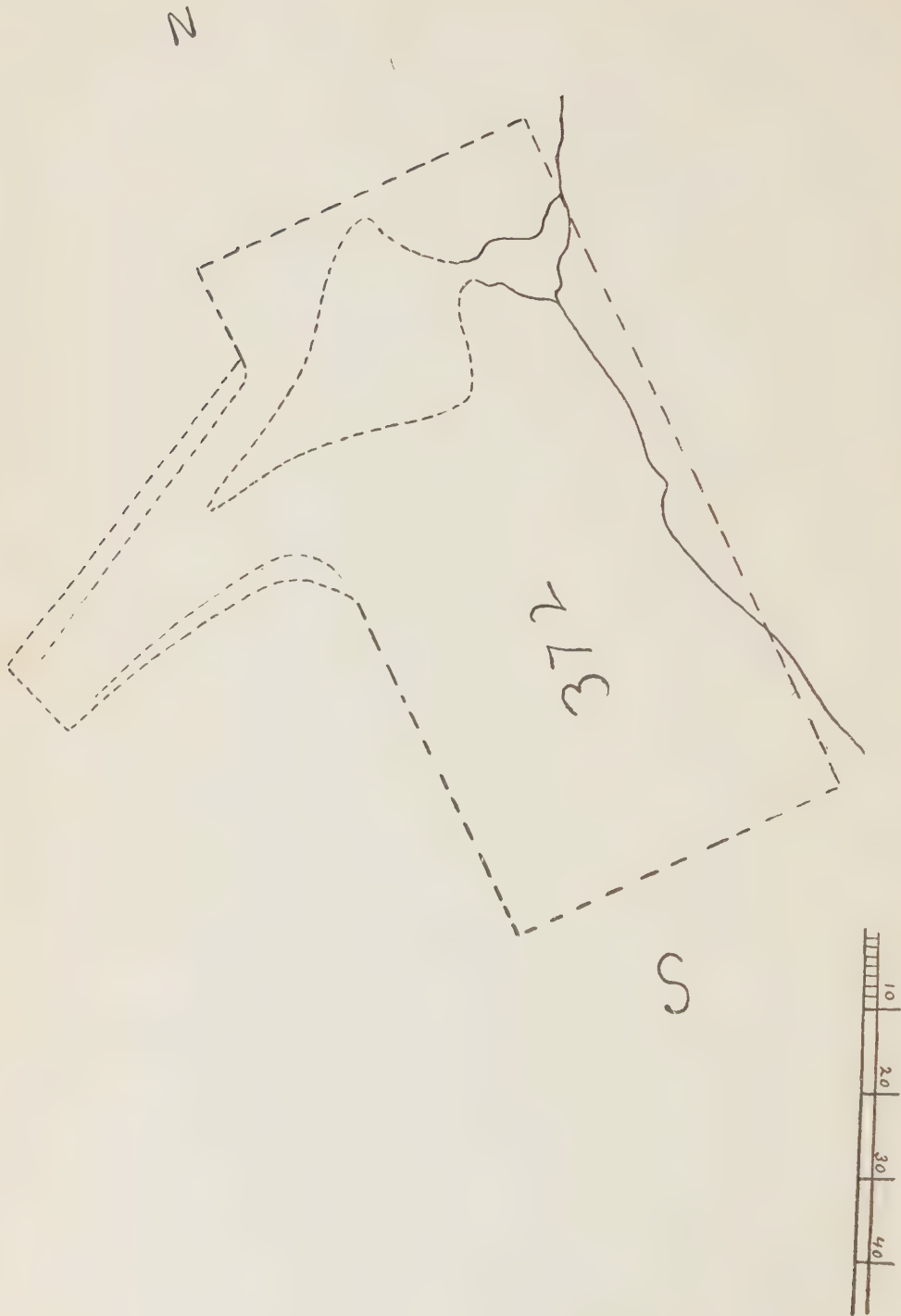
"Present

"Governor-General Anthony Colve,
"Councillor Cornelis Steenwick,
"Mr. Cornelis Van Ruyven and
"Secretary Bayard, assumed Councillors and Fiscal Willem Knyff.

"* * * * *
"* * * * *

"Read and considered the petitions of "Jacob Melyn and Jacob Kip, as guardians "of the widow of the late Cornelis Melyn, "requesting that they may be allowed "and granted possession (in consideration "of the lands which said Cornelis Melyn "reserved to himself when he sold Staten "Island to the West India company) of a "certain piece of land situate between the "mill-kill and Schutters Island, and that "Thomas Lovelace may be refused said "land which they understand he is applying for.

"Ordered:



"Petitioners shall within 14 days from this date show what right they have to any lands on Staten Island, or to the land allowed to Thomas Lovelace.

"* * * * *

"* * * * *

(2 Col. Doc. 706).

II.

The increasing bitterness of the politico-religious struggle in the mother country led indirectly to the Peace of Westminster, which terminated Dutch sovereignty in New Netherland. (2 *Bryant*, 353.) In June, 1674, Charles II granted a new patent to the Duke of York (*Leaming and Spicer's New Jersey Grants*, 41), who issued a commission to Major Edmund Andros as Governor to the Province of New York. (3 *Col. Doc.* 215). Possession of New Netherland was surrendered to the latter by Governor Colve on November 10th, 1674. (2 *Bryant*, 354; 3 *Documentary History of the State of New York*, 45 et seq.)

Governor Andros was the bearer of a warrant for the sequestration of Colonel Francis Lovelace's estate, (3 *Col. Doc.* 225) and on November 12th, 1674, he issued a warrant of attachment thereunder, directed to Thomas Walton, constable upon Staten Island. (13 *Col. Doc.* 481; *post*, pp. 61, 62; see *Bogardus v. Trinity Church* 4 *Paige* 178, 15 *Wend.* 111; 4 *Sandford's Chancery Reports* 369, 633).

At a meeting of the Council held on August 5, 1675, it was ordered that all persons who had warrants for land upon Staten Island should within six weeks apply to the surveyor to have their lands laid out. (13 *Col. Doc.* 485.)

Governor Andros executed a patent bearing date June 3rd, 1676, reciting that the estate of Col. Francis Lovelace had been "legally Attached and Apprized for Debt to his Royall Highnesse," and granting to John Palmer about eighty acres

of land and the uncompleted mill thereon, so attached. (4 *Pat.* 110; *post*, p. 62).

A partly illegible foot note in the record seems to indicate that this patent was called in and another issued in its place. A second patent was executed bearing date the same day and granting to John Palmer land adjoining that above mentioned, and "lying between the two runs at the Mill Creeke beginning with a narrow point and running up wider into the Island. Containing the quantity of 342 acres." (4 *Pat.* 113; *post*, p. 63). This would seem to indicate the point of confluence of Clove Brook and Palmer Run.

John Palmer's name appears as sheriff of Richmond County in 1683; (*Civil List* 463) as judge of the court of admiralty in 1684; (*id.* 276) and as a member of the Council in 1684-5 and 1687-8; (*id.* 312; 3 *Col. Doc.* 543) he seems to have been the confidential agent of Governor Dongan (3 *Col. Doc.* 387, 402, 413, 414, 416, 417, 420, 421, 428, 429, 475, 478) and to have suffered serious losses during the Leisler administration. (3 *Col. Doc.* 610, 662.)

A patent was executed bearing date September 29th, 1676, granting to Andrew Norwood 372 acres of land upon Staten Island, including that formerly granted to him by Governor Lovelace, and the 150 acres formerly occupied by Captain Dudley Lovelace. (4 *Pat.* 109; *post*, p. 60).

Plate II shows a surveyor's rough draft of the 372 acres so granted. Whether Boyd Hill, the school house knoll, Corsen's Brook Valley and the bluff below St. Mary's Church be thereon indicated are questions upon which surveyors might be heard with profit.

The Duke of York sent to Governor Andros a letter bearing date May 7th, 1677, granting the latter's request to visit England. (3 *Col. Doc.* 246.)

September 29th, 1677, marks an epoch in the history of the North Shore of Staten Island, and it appears in a large number of patents granting lands in Richmond County. By one of these, there was granted to Andrew Norwood land lying to the north of his plantation and bounded "north by land formerly of Collonel ffrancis Lovelace west by ye Hills." (4 *Pat.* 141; *post p.* 61). By three other patents lands lying along the Kill van Kull were granted to Gerritt Croosen, (4 *Pat.* 137; *post p.* 68) Peter Jansen (4 *Pat.* 138; *post p.* 69) and Claes Arentse. (4 *Pat.* 113; *post, p.* 69.) Two patents are said to have been executed on this day to John Palmer and one to Francis Barbor, but no record of them appears beyond a recital in a subsequent confirmatory patent to John Palmer. (5 *Pat.* 141; *post p.* 64).

Claes Arentse, from Drenthe, with his wife, three children and a boy; Peter Jansen, shoemaker, from the same province, with his wife and four children and Couraet Croos, a Swiss soldier, had come to New Netherland aboard of the Spotted Cow in April, 1660. (3 *Doc. Hist.* 36, 37). The same vessel in April, 1663, brought over Lammert Jansen Dorlant and Jan Otto van Teyl. (3 *Doc. Hist.* 40, 41). A Claes Arentse was appointed Schout of Bergen in 1673. (2 *Col. Doc.* 578). Claes Arentse, Peter Jansen and Lambert Jansen Dorland seemed to have settled in Breuckelen, as their names appear upon the assessment roll made up there in September, 1676. (2 *Doc. Hist.* 273, 275). There is, however, some doubt whether the Peter Jansen who came over on the Spotted Cow was the same person who appears as grantee in Liber 4 of Patents at 138. (14 *Col. Doc.* 57.)

"November ye 16th the Governor parted from New York and went to take his leave

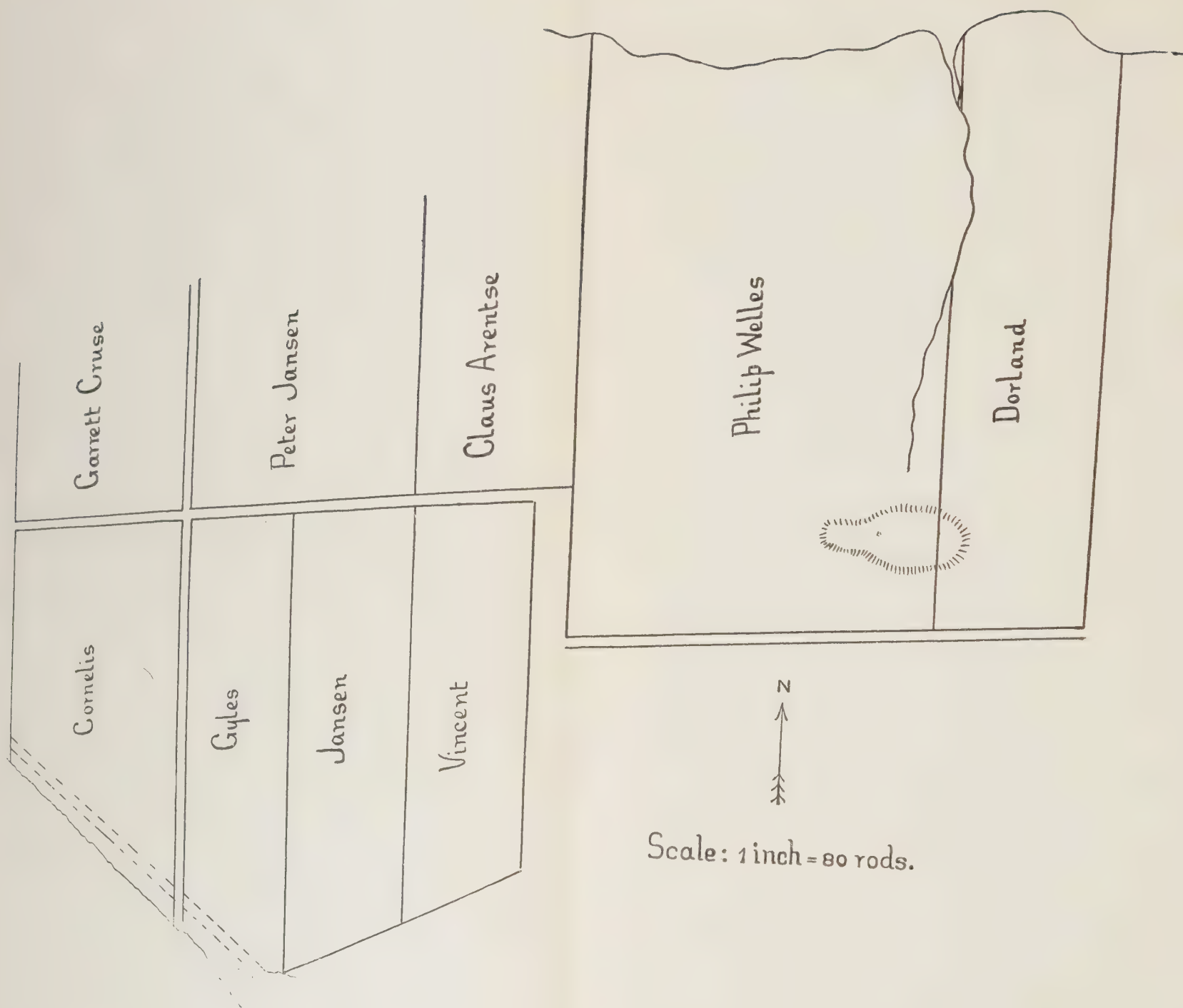
of Governor Carterett in New Jersey and lay there all night; the 17th went aboard near Staten Island, weyed and went down ye Bay neare Sandy Point whence he sayled." (3 *Col. Doc.* 257). Anthony Brockholst remained as Commander in Chief of the province. (*Civil List*, 163).

For the Governor's proceedings in England see 3 *Col. Doc.* 254, 257 *et seq.* During his stay he was knighted (3 *Narrative and Critical History of America* 401) and received a commission authorizing him to appoint a judge of the court of admiralty for the Province of New York. (3 *Col. Doc.* 268). He resumed his government in New York on August 7th, 1678.

The accounts rendered by Governor Andros in England, which brought in the Duke of York a debtor to the amount of some £1100 sterling, (3 *Col. Doc.* 267) seem to have aroused the latter's curiosity as to the condition of his provincial finances. The malice of the Billops and the activity of the friends of Governor Carteret may have had their influence upon further investigations. (3 *Col. Doc.* 221, 239, 276; 3 *N. & C. Hist. Am.* 434).

Mr. Lewin received a commission as the Duke of York's agent at New York and Albany to inquire and find out all the estate, rents, revenues, profits and perquisites belonging and appertaining to him in these places. (3 *Col. Doc.* 279). Governor Andros was ordered to return to England, and to commit the care of his government to Lieutenant Brockholst during his absence. (3 *Col. Doc.* 283). The latter was a Catholic. (3 *Col. Doc.* 657).

Mr. Lewin arrived in New York on October 16th, 1680, and proceeded with his investigation. (3 *Col. Doc.* 302). This seems to have had the effect of spurring on Governor Andros to further grants of



the Lovelace land, applications for which had been received from actual settlers who had begun to make improvements. (13 *Col. Doc.* 546).

The following grants were made during the month of December, 1680, immediately prior to the Governor's departure for England.

By patent dated December 1st, there was granted to Philip Welles 360 acres of land lying along the Kill van Kull to the east of the land of Claes Arentse. (5 *Pat.* 4.) This land is described as "joyning to the northwest side of ye Farme of Coll. Francis Lovelace beginning at a White Oak Tree by the Water side." The survey for this grant was made by Robert Ryder (1 *L. P.* 171) and on December 29th, there was filed a description of a survey of 357 acres of land lying at the head of the Fresh Kill, laid out for Robert Ryder by Philip Welles. (1 *L. P.* 211; see 1 *L. P.* 69, 70.)

By patent dated December 2nd, there was granted to Lambert Jansen Durland 130 acres of land "scituate lying and being on the northeast side of Staten against Constables Hook with a Certaine Messuage Tennement or dwelling House and Fences thereupon being p'te of ye Farme or Plantacôn formly belonging to Coll. Francis Lovelace Esqr late Governor here and surveyed and laid out for Lambert Jansen Durland beginning at a White Oak Tree by the Waterside on ye east side of Philip Wells land." (1 *L. P.* 176; 5 *Pat.* 2; *post*, p. 73.) Durland was a Protestant, (4 *Col. Doc.* 933, 942) and served as representative in the general assembly of 1691. (*Civil List*, 348.)

Was the first patent to John Palmer called in because the Governor thought it expedient to withdraw the admission that the uncompleted mill had stood upon land which had belonged to Governor Lovelace? The patents to Gerritt Croosen (4

Pat. 137; *post*, p. 68) to Welles and to Durland seem to disclose a desire to limit so far as might be, any admission of Governor Lovelace's ownership.

By patent dated December 15th, there was granted to Jacob Cornelise 90 acres of land in the rear of the land of Garret Cruse; (1 *L. P.* 173; 5 *Pat.* 12) to James Gyles 90 acres in the rear of the land of Peter Jansen; (1 *L. P.* 173; 5 *Pat.* 11) to Peter Jansen 80 acres in the rear of his front lot; (*L. P.* 195; 5 *Pat.* 23) and to John Vincent, a New York cooper (*E* 140), 80 acres in the rear of the land of Claes Arentse (Vight.) (1 *L. P.* 196; 5 *Pat.* 27; *post*, pp. 69, 70. See Plate III.)

On December 30th, John Tailor, sergeant, (5 *Pat.* 19) John Fitzgarrett (5 *Pat.* 20) and David Thomas (5 *Pat.* 21, *post*, pp. 70, 71) each received a grant of 88 acres of upland and meadow. The upland lay upon the great plain, and Mrs. J. Bleeker Miller, an authority upon the subject of British land grants in Richmond County, has pointed out that the southwest corner of the former Village of New Brighton extended partly over these three grants, which are frequently referred to as the "Soldiers Lots." (See *Liber of Deeds*, pp. 71, 76.) Whether they were granted to the non-commissioned officers and men of the "company of foot" which Governor Andros brought with him to the province (3 *Col. Doc.* 220) or were allotted to militiamen, (See 13 *Col. Doc.* 449) or otherwise, is a question for subsequent investigation.

Sir Edmund Andros left New York on the 7th and sailed from Sandy Hook on the 11th day of January, 1681. (3 *Col. Doc.* 286.)

Mr. Lewin's report and the answer of Governor Andros contain brief references to Staten Island. The Commissioners of The Duke of York's Revenue reported on

Mr. Lewin's charges and exonerated the Governor, (3 *Col. Doc.* 302, 308, 314), but on September 30th, 1682, a commission was issued to Colonel Thomas Dongan as governor of the Province of New York. (3 *Col. Doc.* 328, 330.) Dongan was a Catholic. (3 *N. & C. Hist. Am.* 403.)

III.

Governor Dongan arrived in New York on August 27th, 1683, (3 *Bryant* 7), and thereafter appointed John Palmer sheriff of Richmond County (*C. L.* 463) and Philip Welles surveyor general. (*C. L.* 175.) The latter, on February 23rd, 1684, was ordered to lay out lands on Staten Island according to each owners patent, (2 *Brod.* 410) and was appointed Connecticut Boundary Commissioner in the same year. (*C. L.* 235; see 4 *Col. Doc.* 628.)

John Palmer had acquired the lands granted to Barbor, Cornelise and Gyles, when, on March 29th, 1684, there was filed a "Description of a survey of 4500 acres of land 'situated in the middle or body of Staten Island' laid out for John Palmer by Philip Welles, surveyor." (2 *L. P.* 33; *post* p. 63.) A patent granting and confirming to John Palmer the lands so surveyed bears date the 2nd day of May, 1684, (5 *Pat.* 141; *post*, p. 63) and on the 27th day of the same month he was appointed by the governor judge of the court of admiralty. (*C. L.* 276.) Thomas Lovelace was appointed sheriff of the County of Richmond on the first day of the following November and served for one year; (*C. L.* 463) he was directed to summon the persons not having land titles before the governor and council. (2 *Brod.* 411.)

Charles II died on February 6th, 1685, and the Duke of York ascended the throne as James II. (10 *Lingard's His-*

tory of England, Lond., 1883, 110; 1 *Macaulay Ch. IV*; 3 *N. & C. Hist. Am.* 406; 2 *Bryant* 387; 3 *Col. Doc.* 359.)

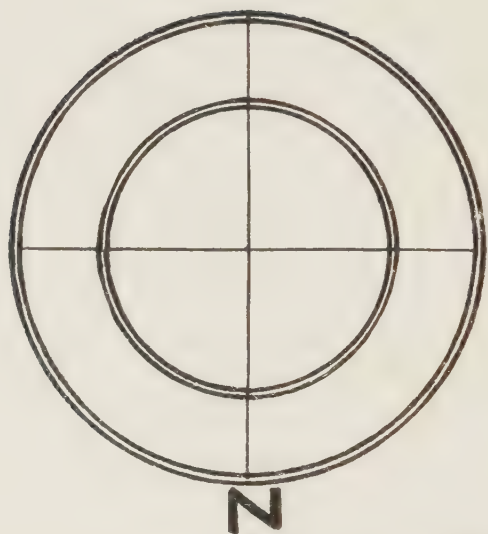
The King sent a letter to Governor Dongan directing that the customary proclamation be made, (3 *Col. Doc.* 360) which order was executed on April 23rd. (*V Council Minutes* 109; *State Library, Albany.*)

A patent was executed bearing date March 17th, 1685, purporting to recite the description contained in the prior patent of December 1st, 1680, and granting and confirming to Philip Welles the land so recited, together with fifty-six acres in addition; but as the patent of 1680 gave the breadth of the land granted as one hundred and ninety-two rods, and the patent of 1685 recites this as fifty-five and a half chains, mistake or fraud is obvious. The grant of the additional fifty-six acres may have been intended to cover encroachments. (See 2 *L. P.* 213; 5 *L. P.* 101; *post*, p. 73.) It was not until February 10th, 1686, that there was filed a description of the survey of the land granted to Welles by the patent of 1685, and this survey was made by Philip Welles himself. (2 *L. P.* 148; *post* p. 72.)

In May the governor's salary was raised from £400 to £600; he received a new commission and fresh instructions and sent home a detailed report of the state of the province. (3 *Col. Doc.* 369, 377, 382, 389.)

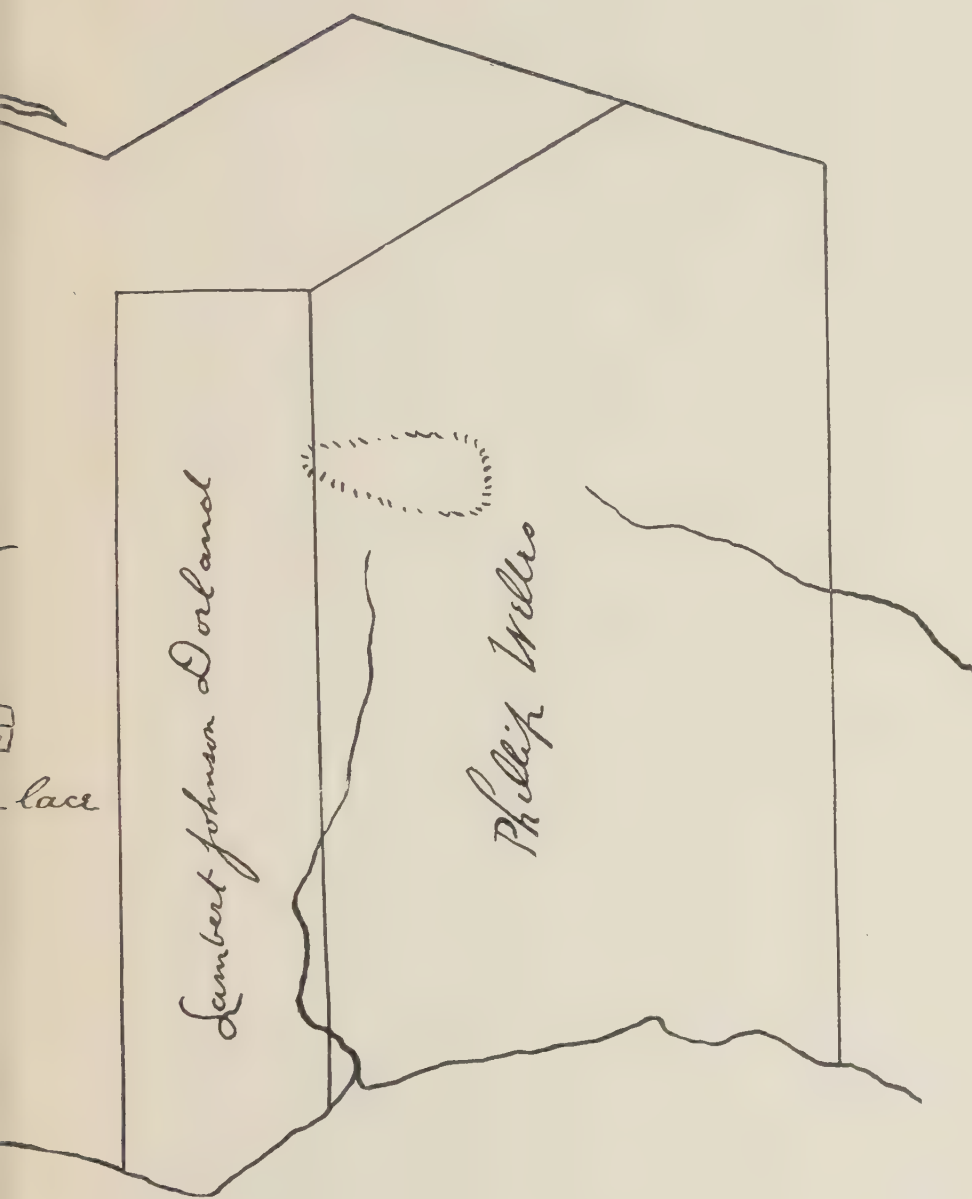
A commission had been issued constituting Sir Edmund Andros Governor of New England, and he arrived in Boston in December, 1686. (2 *Bryant* 387.)

On January 17, 1687, there was filed a description of a survey of 5100 acres of land, lying upon Staten Island, on the Kill van Kull, together with the great Island of salt meadow near the Fresh Kill, and opposite to Long Neck, laid out



Layd Downe by A scale of
Eighty Rodd to an Inch

(Capt Thomas)



lace

for John Palmer by Philip Welles, surveyor. (2 *L. P.* 208; *post*, p. 65.) This was followed by the filing on the 5th day of March succeeding, of a survey of 340 acres of land, lying upon the east end of Staten Island, bounded on the north by the Kill van Kull, and known by the name of Loulace's Farme, laid out for Capt. Thomas Loulace, by Philip Welles, surveyor. (2 *L. P.* 213; *post*, p. 74. See Plate IV.) Whether Vanderbilt Brook, Arietta Street Brook, Duck Pond, Jersey Street Brook and a part of Soria Brook be thereon indicated, are questions for the surveyors to consider.

As Lovelace never received a patent for the land so laid out, and as it was more than twenty-one years afterward that his niece and her husband succeeding in obtaining a grant, it is a fair assumption that the latter survey was made in the interest of Philip Welles, John Palmer and Governor Dongan. There is no recognition of any right in Thomas Lovelace in the grants to Welles, Dorland or Palmer. Whatever rights Lovelace had were probably only possessory and not likely to have ripened into a legal title by lapse of time. *Nullum tempus occurrit Regi*. The Lovelace family was in disfavor at court, and so continued throughout the reign of James II, for John, Lord Lovelace, had been arrested in 1683 on account of the Rye House plot, and in March, 1688, was summoned before the privy council for telling some constables that they need not obey a Roman Catholic justice of the peace. (34 *Dict. Natl. Biog.* 166.) The Protestant Lovelace probably had few rights which the Catholic Dongan felt bound to respect.

The final patent to John Palmer bears date March 31st, 1687. (6 *Pat.* 198; *post*, p. 65.) It not only confirmed all the prior grants of land to him, but granted some six hundred acres in addi-

tion and erected the whole territory into The Lordshipp and Mannor of Cassil-towne, with appurtenant manorial rights and privileges including the right to maintain courts baron and courts leet, all of which John Palmer and Sarah his wife conveyed to Thomas Dongan by deed dated April 16, 1687. (*Liber B, of Conveyances*, page 80, *Richmond County Clerks office*.)

Late that summer or early in the fall Judge Palmer was sent as a special messenger to the King by Governor Dongan, who seems to have desired to maintain over Palmer that control of living which so frequently implies control of action. (3 *Col. Doc.* foot of p. 430.)

Again trouble arose over the revenues and accounts. The governor accused Mr. Santen and the latter accused the former. (3 *Col. Doc.* 492, 493.) Dongan was recalled (*id.*) and Matthew Plowman received a commission as collector and receiver of revenues for the Province of New York in place of Mr. Santen. (3 *Col. Doc.* 501.)

IV.

The commission of Sir Edmund Andros as Governor of New England, in April, 1688, was enlarged so as to include New York and the East and West Jerseys. (3 *Col. Doc.* 537.) A commission was issued to Captain Francis Nicholson as Lieutenant Governor. (3 *Col. Doc.* 536, 537.) Under the order of the King, Dongan resigned his government to Andros on August 11th, and the latter returned to Boston leaving Nicholson in command at New York. (3 *N. & C. Hist. Am.* 409; 3 *Col. Doc.* 550, 566.)

William of Orange landed in England only about a month after Andros returned to Boston. In another month James II had fled to France, and in February, 1689, William and Mary were proclaimed in London King and Queen of England.

(2 *Macaulay Ch. X*; 3 *Bryant*, 12; 3 *Col. Doc.* 572.)

Andros was made prisoner in Boston. (3 *Col. Doc.* 578.) The government of New York had been left in the hands of Lieutenant Governor Nicholson and of Frederick Philipse, Stephen van Cortlandt and Nicholas Bayard, members of the Council.

It was suspected that Nicholson was under Jesuit influences. The people distrusted the Protestant members of the Council who had been recipients of Catholic favors. The time was ripe for Jacob Leisler, a German emigrant from Frankfurt, a leader of the people, or, as they were termed by the Council, "the rabble," to seize the reins of government. Lieutenant-Governor Captain Nicholson departed for England "to render an account of the deplorable state of affairs" in New York. (3 *Col. Doc.* 585.) Former Governor Dongan prepared to depart from the province, four great guns having been discovered in his mill on Staten Island. (*Clute's Annals of S. I.* 63; 2 *Doc. Hist.* 3, 5.) The events of Leisler's administration may be found very fully set out in 2 *Doc. Hist.* 1 *et seq.* and in 3 *Col. Doc.* 583 *et seq.* (See 1 *William Smith's History of The Province of New York* 93; William and Mary were proclaimed by Leisler on June 22nd, 1689. (3 *Bryant* 15.)

It was probably during this eventful year that Thomas Lovelace died. Having no children, he had sent to Barbados for his niece Mary and her husband Ellis Duxbury, but died before they arrived in New York. His widow hearing of their arrival, sent for them, and, telling them that it was her husband's desire, delivered to them possession of his farm on Staten Island, reserving for herself maintenance for life. (3 *L. P.* 69; *post*, p. 75.)

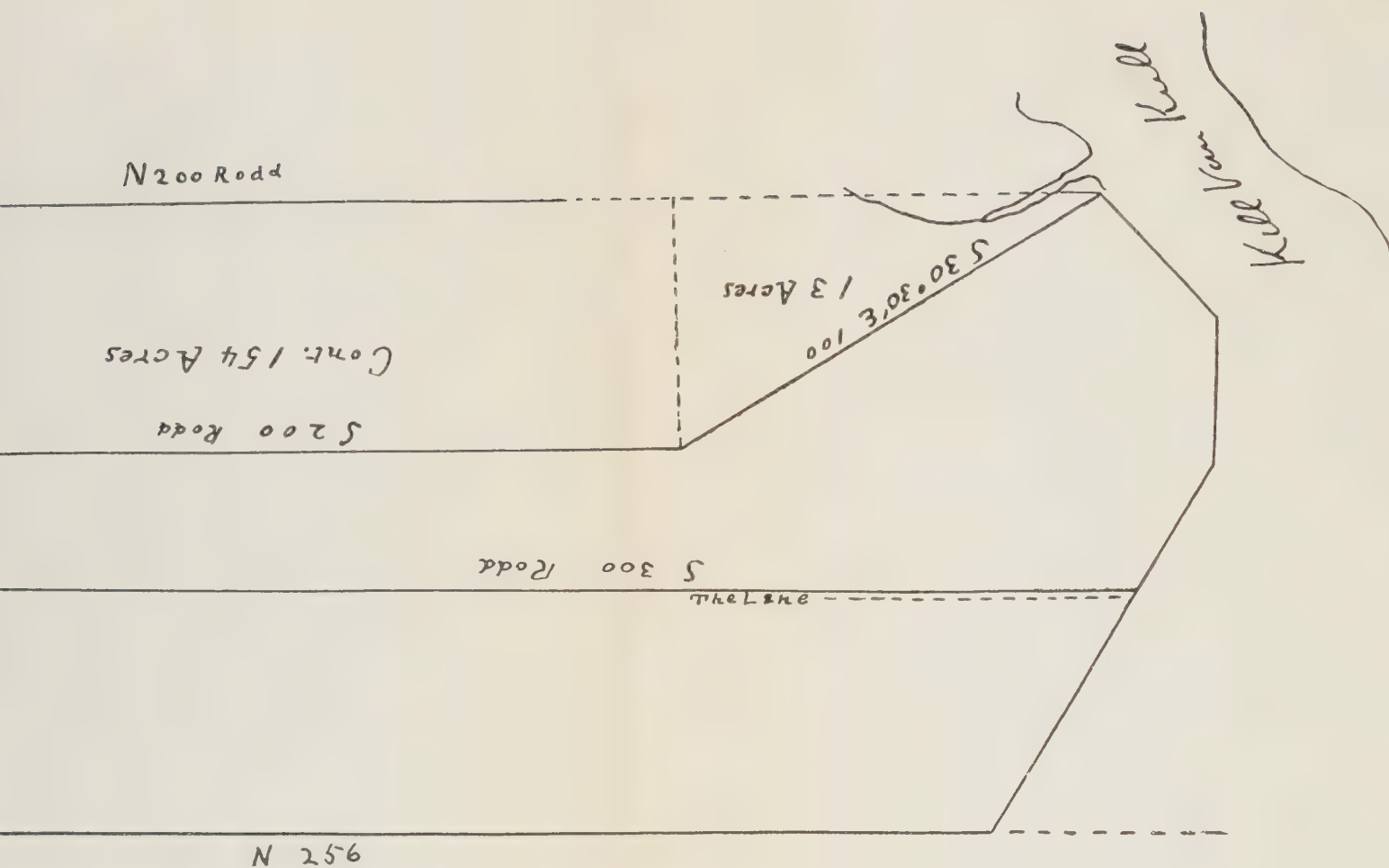
In November William and Mary granted

a commission to Colonel Henry Sloughter as governor of the Province of New York. (3 *Col. Doc.* 623, 629.) He did not sail from England until December 1, 1690, and then went by way of Bermuda. Richard Ingoldsby, as captain of a company of grenadiers, sailed at the same time, arrived in New York on January 29th, 1691, and at once attacked the fort, which Leisler refused to deliver up except upon the order of Sloughter. (3 *Bryant* 21.)

Sloughter arrived on March 19th, 1691, and demanded possession of the fort. A slight delay on Leisler's part for the purpose of establishing Sloughter's identity, was made the pretext for his arrest on a charge of treason, under which he was tried, convicted and executed. By act of attainder his family was deprived of his estate, but the attainder was reversed by act of Parliament in 1695. (2 *Doc. Hist.* 249, 250. See 4 *Col. Doc.* 320, 325.)

Duxbury had presented a petition to Major Ingoldsby for a grant of the Lovelace farm on Staten Island, and a patent was executed bearing date March 19, 1691, the day of Sloughter's arrival. This patent recites the seizure and possession by Thomas Lovelace of Lovelace's farm on Staten Island; the marriage of Ellis Duxbury with Mary the niece of Thomas Lovelace; that said Mary was the nearest heir in the Province of New York to said Thomas Lovelace; the death of Thomas Lovelace and the presentation of the petition to Major Ingoldsby; and grants the farm prayed for with the following proviso:

"Always provided that anything herein contained shall not be taken or construed to Barr or Deprive any nearer Heir or Heirs of him the said Thomas Lovelace, Deceased, of his or their rights to the farm or plantation aforesaid if any such Heir be." (6 *Pat.* 374; *post*, p. 74.)



The Draft of Lambert Jansen Dorlands
 Land on Staten Island Set-Down by a Scale
 of forty rods to an inch.

The proviso nullified the grant in so far as the marketability of the title was concerned, and it is difficult to see what useful purpose the patent subserved, except possibly the recognition of Ingoldsby as Commander in Chief. Duxbury seems to have stood well with the new authorities, for he was appointed judge of the court of common pleas of Richmond County and served until 1710. (*C. L.* 437.) He represented Richmond County in the first and fifth general assemblies. (*C. L.* 348.)

It will be noticed that this grant is in the name of the sovereigns, a form adopted by Sloughter and subsequently adhered to. (*5 Col. Doc. at p.* 369.)

Governor Sloughter died on July 23rd, 1691. (*2 Doc. Hist.* 219; *see 3 Col. Doc.* 794, *4 Col. Doc.* 1152.) He was succeeded by Benjamin Fletcher, whose administration was marked by grave scandals, which led to his recall. (*3 Col. Doc.* 818, 827.) The Earl of Bellomont, appointed in his place, (*4 Col. Doc.* 266) reached New York on April 2nd, 1698, and died there on March 5th, 1701. (*4 Col. Doc.* 302, 857.) Edward Hyde, Lord Viscount Cornbury, received a commission as Governor of the Province of New York. (*4 Col. Doc.* 883.)

Queen Mary had died December 28th, 1694, O. S., and King William departed this life on March 8th, 1702. (*15 En. Brit.* 594; *24 id.* 580.) Queen Anne ascended the throne (*2 En. Brit.* 62) and

was proclaimed in New York on June 18th, 1702. (*4 Col. Doc.* 960.)

V.

Ellis Duxbury now petitioned anew for a patent (*3 L. P.* 69) but obtained only a survey. (*id. post, p.* 75.) After waiting six years, he presented another petition and this time received an unconditional grant. (*7 Pat.* 385; *post, p.* 76.) It will be noticed that one of the grantees in this patent is referred to as "our Loving Subject Ellias Duxbury" and Duxbury's name appears as Elias in the assembly records. (*C. L.* 348.) Ellis was a common corruption of Elias. (*Bardsley's "Our English Surnames,"* 54.)

But Duxbury's troubles were not ended. The encroachment by Philip Welles on Dorland's west boundary caused the latter to encroach upon Duxbury's land. The surveyor general made a resurvey and rendered a report in Duxbury's favor. (*5 L. P.* 101; *post, p.* 73. *See Plate V.*) Apparently the encroaching lines were never rectified, as is witnessed by the metes and bounds of the Van Buskirk farm. (*Beer's Atlas of Staten Island,* 1874, *Plates 4 and 8.*)

Ellis Duxbury died in 1718, leaving a last will and testament by which he devised his plantation on Staten Island to The Minister Church Wardens and Vestry of Saint Andrew in the County of Richmond. (*Post, p.* 77.)

THE END

APPENDIX.

PART I. LOVELACE PEDIGREES.

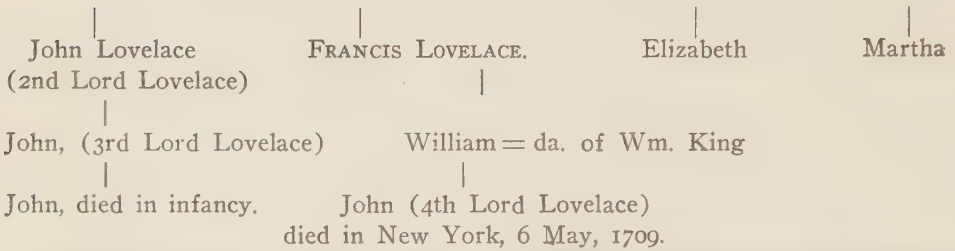
A.

John Lovelace

(died 1558) of the Manor of Hurley in Berkshire.

Richard Lovelace
of Hurley.

Sir Richard Lovelace,
Lord Lovelace, Baron of Hurley. } = 1st Catherine Hill
 = 2nd Margaret Dodsworth



(Compiled from 3 Banks Dormant and Extinct Baronage 497 and Burkes Dormant and Extinct Peerages 334.)

The manuscripts of the House of Lords,
1661. June 5, Petition of Francis Lovelace Esqre second son to Richard Lord Lovelace, Baron of Hurley, deceased. Petitioner being inveigled to marry without the privity of his relatives, and much below his quality and condition was afterwards, by the like circumvention and cozenage, induced to settle his whole estate upon trust to the separate use of his wife. A short time afterwards he was and still is unjustly excluded from enjoying the estate so settled, and also from cohabitation with his wife. There being no judicature now in being by which such misdemeanors and practices can be punished and redressed, petitioner appeals to their Lordships, and prays that Ann King, Ann Lovelace, and others be sent for, and a day appointed for hearing his complaint. (*See L. J. XI. 285.*)

Annexed:—I. Statement of petitioners grievances.

Historical Manuscripts Commission, 7th Report, Appendix p. 144.

Manuscripts of S. H. Le Fleming Esqre of Rydal Hall.

(850. April 16, 1667. Newsletter, 12th.

" * * * Colonel Lovelace, brother of Lord Lovelace, is to succeed Colonel Nicholas in the government of New York."

Hist. Mss. Com. 12th Rep. App. VII. 47.

(1595.) March 2, 167 4-5. Newsletter 26th.

" * * * The King has appointed a committee consisting of the Duke of Monmouth and others to inquire into the surrender of New York. They this morning examined Col. Lovelace the governor, who gave them the reasons of his absence at the time of the surrender. They were not satisfied and have adjourned till Thursday. * * *"

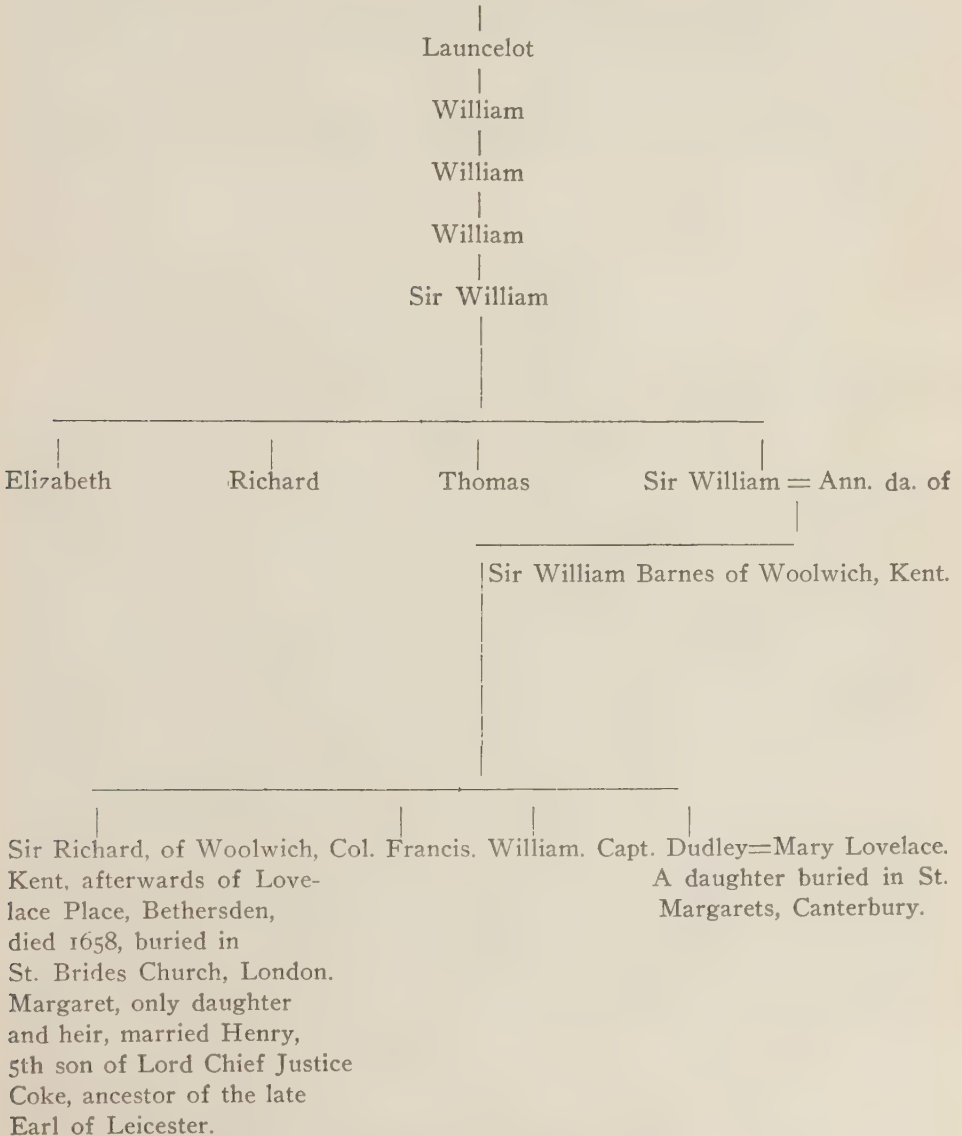
(1599.) March 9, 167 4-5. Newsletter, 5th.

"* * * Colonel Lovelace was examined again to-day at the Cockpit. A report is to be drawn up."

Hist. Mss. Com 12th Rep. App. VII. 117.
34 *Dict. Natl. Biog.* 165.

B.

Richard Lovelace
of Queenhithe, London, temp. Henry VI. purchased Bayford.



Compiled from Berrys County Genealogies, Kent, pp. 474, 475.

PART II.
NORWOOD GRANTS.

1672 Sept. 5. Description of a survey of Andrew Norwoods land on Staten Island, containing 150 acres.

1 *Land Papers*, 47.

Francis Lovelace Esq ^{re} Governor &c to Mr. Andrew Norwood.	Patent. Dated 19 September 1672. Recorded 3 Patents 113. Consideration, quit rent of £0. 12. 6. being at the rate of one penny per acre.
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Grants all that tract of land upon Staten Island bounded on the north side upon land of Capt. Dudley Lovelace, near the watering place; on east side along the shoare extending from the said land where now there is an oaken tree marked with an X 174 English poles to another oaken tree at the corner of a sandy bay marked with a cross and from thence extending west south west into the woods parallel to the Governors land so far as to contain 150 acres, with fitting meadow.

Edmund Andros Esq ^{re} &c to Andrew Norwood.	Patent. Dated 29 September 1676. Recorded 4 Pat. 109. Consideration, payment of quit rent of 4 bushels of good winter wheat to such officer or officers in authority in N. Y. as shall be empowered to receive the same.
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Recites that "Whereas there is a certain piece of land upon Staten Island lying upon the Eastern side thereof being in Length by the water side 82 chains and in breadth fforty Including also a certain Valley of Land lying in the reare of the said land being in Length by the side of the Hills fforty chaines and at the reare six chaines and Eighteen chaines by the reare of the said Land being bounded to the Northward by the land of Coll. Francis Lovelace, to the East by the water side and to the South and West by the commons Containing three hundred and seventy two acres of land as also twenty five Acres of Meadow Ground adjoining unto the meadow of Capt. Nathaniell Davenport and Company lying to the Southward of the Point of John Tunison's Three hundred Acres of which said land was heretofore granted by Patent from Coll. Francis Lovelace (then Governo^r) unto Mr. Andrew Norwood and Capt. Dudley Lovelace and a beginning of a settlement made thereupon the remainder being New Land undisposed of All which hath now by Warrant from mee been laid out for Mr. Andrew Norwood as by the returne of the Survey under the hand of the Surveyor doth and may appear. * * *

Grants the land so recited.

1676, Oct. 5. Description of a survey of 372 acres of land "lying upon ye easterne side of Staten Island" laid out at ye request of Andrew Norwood of ye Island of Barbados, merchant, by Ro:Ryder, deputy surveyor, [with draught.] (See Pl. II.) 1 *Land Papers* 93.

1676, Oct. 7. Description of the meadow land assigned to the foregoing. Ro:Ryder, deputy surveyor. 1 *Land Papers* 94.

Patent.

Edmund Andros Esq^{re} Dated 29 September 1677.

to Recorded 4 Pat. 141.

Andrew Norwood. Consideration, quit rent of
one bushel of good winter wheat
to be paid in New York, &c.

Grants land to the North of Norwoods plantation "being in length by ye water side 114 Rodds, ranging West South West up to ye Hills 35 Rodds. Bounded North by land formerly of Collonel Francis Lovelace West by ye Hills in all 25 acres."

1677, Oct. 10. Description of a survey of 25 acres of land upon Staten Island, laid out for Andrew Norwood, and lying to the northward of his plantation. Ro:Ryder, surveyor. 1 *Land Papers* 130.

III.

PALMER GRANTS.

Warrant authorizing Governor Andros to seize Colonel Lovelace's Estate.
[New York Entries, CLĪ. 15.]

Whereas it appears by the accounts of Francis Lovelace Esq^r my late Lt Govern^r of New York, stated and audited by Thomas Delavall Esq^r my late Audit^r there, that there is due unto me from ye said Francis Lovelace a considerable sum^e of money amounting to ye sum^e of about seaven thousand pounds; and being informed yt ye said Francis Lovelace hath some estate in lands and houses by w^{ch} I may in some measure be reimbursed my said debt; These are to will authorize and require you imediately after your arrivall at New Yorke wth out losse of time, fully to informe yourselfe what estate reall or personall ye said Francis Lovelace hath at that place, which haveing done you are by due course of law to possess yourselfe thereof in my name and to my use, and to receive ye rents, issues and proffitts thereof until I shalbe satisfyed such sum^e and sum^{es} of money as shall appear to you to be due and oweing unto me by ye said Francis Lovelace. And for soe doing this shalbe yo^r Warrt Given under my hand at Windsor ye 6th day of Augst 1674.

To Major Andros my Lt and
Governo^r of New York.

(3 *Col. Doc.* 226.)

An Ord^r of Attachment on Governo^r Lovelaces Estate, on Staten Island.

Whereas I have received particular directions and Order from his Royall Highnesse, to informe myselfe what Estate, reall or personall, there is in these Parts, belonging to Colonell *Francis Lovelace*, late Governo^r here, and to

possesse myselfe of the same, in his Royall Highnesse name and to his use: These are in his Maties name to will and require you, forthwith to lay at Attachment upon the Houses and Plantacôn upon *Staten-Island*, lately belonging to Colonell *Francis Lovelace*, as also upon the Water Mill sett up by him, and Lands there unto appertaining, together with the Horses and Cattle which may be found upon the said Island, or any other Goods there, of the said Coll. *Lovelaces*, the which shall bee prosecuted by due course of Law, on behalfe of His Royall Highnesse, against the said Coll. *Lovelace*, for Moneys and Arrearages of Moneys or Goods, due unto his Royall Highnesse; and for so doing, this shall be yo^r Warrant, Given under my hand and Seale in New York, the 12th day of November, in the 26th yeare of his Maties Reigne, Annoque, Domini, 1674. E. ANDROS.

To Mr. *Thomas Walton*, Constable upon *Staten Island*, who is to make retourne of his Service of this Attachment, at the next Court of Sessions, to be held at Gravesend. (13 Col. Doc. 481.)

"A Confirmation Granted unto Mr. John Palmer for the Mill and some Land adjacent upon Staten Island.

Edmond Andros Esqr, &c.

Whereas the Estate of Coll. Francis Lovelace (late Governor here) hath been legally Attached and Apprized for Debt to his Royall Highnesse amongst which Materiall Stones and Appurtenances for a Mill in part built and about Eighty Acres of Land adjoining lying on the North side of Staten Island and being within Constables Hooke was Apprized at ffoure Thousand Guilders Sewant* as by the said Apprisement doth and may appear the said Materialls and Mill not yet finished, spoiling and going to decay And there being none on the said Island, which is very much wanted, therefore on application of Mr. John Palmer for the Generall good of the Inhabitants, the said Mr. John Palmer offering to pay according to the Apprizement By vertue of the Authority derived unto me from his Royall Highnesse I have Given and Graunted And by these presents do Give and Graunt unto the said Mr. John Palmer his Heirs and Assignes the aforesaid Mill and Appurtenances and Land adjacent Containing the Quantity of about Eighty Acres as aforesaid, with Meadow Ground Proporcônable hee finishing building up the said Mill making up the Dam and keeping the same in due repaire for the Publicke use as other Mills are or ought to bee and Improving the Land according to Law To have and to hold the said Mill and Appurtenances Land Meadow Ground and premises unto the said Mr. John Palmer his Heirs and Assignes unto the proper use and behoofe of him the said Mr. John Palmer, his Heirs and Assignes forever Hee Continuing in Obedience and Conforming himself according to the Lawes of this Government and yielding and paying therefore yearly and every yeare unto his Royall Highnesse use as a Quitt Rent foure bushells of good Winter Wheat unto such Person or Persons in Authority there as shall bee Empowered to receive the same. Given under my Hand and Sealed with the Seale of the Province in New York the 3rd day of June in the 28th year of his Maties Reigne Annoq Domini 1676.

This Patent alled in & E. ANDROS.
its place.

I do hereby Certify the foregoing to be a true Copy of the Original Record. Word *said* interlined between 12th and 13th lines and the imperfect note at the Bottom representing the said Record which is there defaced. Compared therewith by me

LEWIS A. SCOTT, Secretary.

(4 *Pat.* 110.)

(Lewis Allaire Scott was Secretary of State from October 23rd, 1789, to March 24th, 1793. *Civil List* 170.)

(*See N. Y. Evening Post, March 17, 1900, p. 13, first and second columns.)

Patent.

Edmund Andros Esqr &c.

Dated 3 June 1776. (So in record.)

to

Recorded 4 *Pat.* 113.

John Palmer.

Consideration, quit rent of

16 bushels of good winter wheat &c.

Grants land within Constable Hook on the North side of Staten Island and lying between the two runs at the Mill Creeke beginning with a narrow point and running up wider into the Island. Containing the quantity of 342 acres.

1684, March 29. Description of a survey of 4500 acres of land "situated in the middle or body of Staten Island" laid out for John Palmer by Philip Welles, surveyor.

2 *Land Papers* 33.

"Confirmacôn,"

Thomas Dongan

Dated 2 May 1684.

Lieut-Governor, and Vice Admirall, &c.

Recorded 5 *Patents*, 141.

to

Consideration, quit rent of one

John Palmer.

lamb and 8 bushels of good winter wheate if demanded.

Recites patent of 29 Sept. 1677, granting to John Palmer a parcel of land upon the North side of Staten Island within Constable Hook "lying between the two runs at the Mill Creeke beginning with a narrow Point and running up wider into the Island Containing the Quantity of three hund^d forty two Acres Meadow Ground to be Laid out Proporcônably."

Recites patent of 29 Sept. 1677, granting to John Palmer a parcel of land on Staten Island "beginning att the Pointe of the Mill Creeke soe to goe to a Certaine runn or Creeke to the East thereof forty Chaines or one hund^d and Sixty Rodd and from thence Stretching into the Woods Ninety six Rodd Containing Ninety six Acres together with the Mill and Millstones thereon with Meadow Ground Proporcônable."

Recites that "Whereas the said Sr Edmund Andross Did Give and Graunt unto ffrancis Barbor of the aforesaid Island one Lott of Land on the said Island Bounded on the North with the Land before mencôned belonging to the said Mill on the east with the Land formerly belonging to Garrett Cruse Deceased, on the South with the Land formerly belonging to Jacob Cornelis and on the West with the Land of the said John Palmer Containing Eighty Acres."

Recites patent of 15th December 1680, granting to Jacob Cornelisse "another Parcell of Land on the said Island in the reere of the said Garret Cruse

his land and running Direct South one hund^d thirty-two Rodd to a Runn which Goes to the Mill of the said John Palmer and soe by the said Runn southeast one hund^d twenty eight Rodd and from thence Direct North two hundred and twenty Rodd to the marked Tree of the said Garrett Cruse and from thence West Six Degrees Southerly one hundred and Six Rodd Containing in all ninety Acres of Land there being left eight Rodd in Breadth for highways with eight Acres of Meadow to be Laid out where most Convenient."

Recites patent of 15th December 1680, granting to "James Gyles another Parcell of Land on the said Island in the Reere of Peter Johnson's Land beginning at a Stake by the highway that is left betwixt the said Peter Johnson's and the said Garrett Cruse his Land and Runns in length South two hund^d twenty fouer Rodd to the Runn that Goes to the said John Palmer's Mill and soe by the said Runn fifty fouer Rodd to the Clove Bridge and from thence East six Degrees Northerly twenty Rodd and from thence Direct North two hund^d forty eight Rodd to the Reere of the said Peter Johnsons and by the reare of the said Peter Johnson's West six Degrees Southerly Sixty fouer Rodd to the afore-said highway being in all Ninty Acres of Land with eight Acres of Meadow to be laid out where most Convenient."

Recites that "Whereas the said ffrancis Barbor, Jacob Cornelis and James Gyles Did by a Certaine Writeing or Deed under their Hands and Seales Convey Assigne and make over all their Right Title and Interest to the aforecited Parcells of Land and Meadow unto the said John Palmer his Heires and Assignes forever as by the said Writeings and Deeds may more at Large Appear by Virtue whereof the said John Palmer became and now is in Possession of all and Singular the Premises and hath made Great Improvement^{ts} thereon by Building of Houses, Barnes, Stables, Mills, Dammes, fencing and other Necessarys for Husbandry and Whereas there is another Certaine Tract or Parcell of Land Scituate lyeing and being on the Staten Island Surveyed and laid out for the said John Palmer in the middle or body of the said Island being at the South East Corner of the Land of John Vincent and Runns due East to the Land of Andrew Norwood and soe by the Reere of the said Land to the South West Corner in the Valley neare the South East end of the Clove and from thence upon a Direct Line to the North East Corner of Thomas Stillwells Land thence by his Land and the Land of Wm. Stillwell upon the hills to the North West Corner of Geo. Cumins his Land thence upon a Direct Line to the South East Corner of James Hubbards Land at the head of the fresh Kill and by his land to the reere of the Land of the Inhabitants of Karles Neck and soe by the Reere of the said Karles Neck Lotts to the Greate Swamp including the said Swamp to the Reere of the Soldiers Lotts by the s^d Land and the Land of Cornelis Coursen and Companys after Lotts to the Land of the said John Palmer aforementioned and by the said Land to the South East Corner of the said John Vincents Land where it first began. Containing with all the Hills Valleys and Fresh Meadows within the above Specified Bounds fouer Thousand five hund^d Acres (allowance being given for Highways) Together with the Greate Island of Meadow lyeing near the fresh Kill as by the Returne of the Surveyor under his Hand bearing date the twenty ninth day of March one thousand six hund^d Eighty fouer Doth and may Appeare."

Grants all the land so recited.

1687. January 17. Description of a survey of 5100 acres of land, lying upon Staten Island, on the Kill van Kull, together with the great Island of salt meadow, near the Fresh kill, and opposite to Long neck, laid out for John Palmer, by Philip Welles, surveyor.

2 Land Papers 208.

"The following Pattent was Recorded for John Palmer Esq^{re} the 30th day of July Ano. Dom. 1687.

Thomas Dongan Capt. Generall Govern^r in Chief and vice Admirall in and over the Province of New York and Territorys depending thereon in America under his most sacred majesty James the Second by the Grace of God of England, Scotland France and Ireland king Defender of the faith &c: To all whom these presents shall come, sendeth Greeting Whereas John Palmer of the City of New York Esq^r as well by vertue of severall deeds & Patents to him or them under whom he claymes made by the former Governo^{rs} of this Province, as by vertue of a Certaine patent or Confirmac^on under my hand and seale of the province Bearing date the second day of may 1684 stands Lawfully and Rightfully seized of & in all that Tract or parcell of Land scituate Lying and Being on the north side of Statton Island within the County of Richmond Limited & Bounded in manner here after expressed, That is to say, Beginning at a Cove lying on the Sounds, or Kill van Cull at the east bounds of the Land of Garrett Cruise and so running in the woods by the said kill to a marked tree and from thence by a line of marked trees according to the naturall position of the poles south & by east two degrees and thirty minutes southerly according to the compass south there being eight degrees and forty five minutes variation from the northwestward and from thence by reare of the land of Garrett Cruise & Peter Johnsons east and by north two degrees & thirty minutes northerly to the line of peter Johnsons reare lott & by his line south & by east two degrees and thirty minutes south sixty one chaines and then by the reare of the aforesaid lott and the lott of John Vincent northeast & by east one degree northerly to the southeast corner of the land of John Vincent thirty three chaines and a half, from thence by his east line north & by west two degrees and thirty minutes northerly to a white oak tree marked with three notches Bearing northwest from the fresh pond, from thence to a young chestnut tree the southwest corner of the land of Phillip Welles & soe by a line of marked trees east nine degrees & fiveteen minutes southerly by the south side of a small fresh meadow & to the north of the fressh pond including the pond to the land of Mr. Andrew Norwood and soe by his land as it runs to the wood of the land of Mary Brittain & soe by the reare of the old Towne lotts to the land of Isaac Bellew and Thomas Stillwill & from thence upon the Iron hills to the land of William Stillwell & by his land to the land of George Cuminis & from his northwest Corner to the southeast corner of the land of Mr. James Hubbard at the head of the fresh kills & so Round by his land to the reare of the lotts at Karles neck and so by the lotts to the highway left by Jacob pullion & the great swamp to the land of John ffitz Garrett including the great swamp then

by the soldiers lotts & the reare lotts of Cornelis Corson & Company to the southeast corner of their ffront lotts & soe by the runne which is their bounds to the mill pond including the mill pond to the sounds or Kill van Cull & soe by the sounds to the Cove where first begun. Containeing with all the hills valleys ffresh meadows & swamps within the above specified bounds, five thousand one hundred acres, be the same more or less. To Hold to the said John palmer his heirs and Assigns forever at & under such quit rents as are reserved payable to his said mag:^{tie} his heirs & successors in and by the said recited patent relacôn to the same being had may more at large appeare. And Whereas, there is a great Island of salt meadow lying neare the ffresh kills over against long neck not yet appropriated to any pticular psôn And Whereas the said John Palmer has made application unto me for a grant of the said Island of salt meadow under the seale of the province and that the before mentioned to have been granted premisses together with the said island may be converted into one lordshipp or mannor Now know ye that for good and lawfull consideracôns me thereunto moving and for the quitt rent hereafter reserved by the said Thomas Dongan by virtue of the power and authority to me derived from his most sacred maj^{tie} & in pursuance of the same Have Given Granted Rattified released and Confirmed & by these presents do give grant Rattify Release & confirm unto the said John Palmer his heirs and assigns all that the aforementioned to have been granted tract of land together with the said Island of salt meadow as also all the messuages tenements buildings fencings orchards gardens pastures meadows marshes woods underwoods trees timbers quarrys rivers rivoletts Brooks ponds lakes streams creeks harbours beaches ffishing Hawking Hunting & fflowing mines mineralls (silver & Gold mines only excepted) mills milldamms and all the right members liberties privileges jurisdictions Royalties hereditaments proffits advantages and appurtenances whatsoever to the same belonging or in any wise appertayning or accepted reputed taken known or occupied as part parcell or member thereof. And moreover by virtue of the Commission & authoritie to me the said Thomas Dongan given and the power in me residing & for the reasons & considerations above recited I have & by these presents doe order make & constitute the said tract or tracts of land & premisses with their and every of their appurtenances into one Lordship or mannor to all intents & purposes & the same shall from henceforth be called the Lordshipp & mannor of Cassiltowne & I the said Thomas Dongan have also given & granted & by these present do give & grant unto the said John palmer & his Assigns full power and authority att all times forever hereafter in the said Lordshipp and mannor over Courts Leets & over Courts Barron to hold & keep at such time and times & soe often yearly as they shall see meete & all fines issues amerciaments at the said Courts leet or Courts Barron to be holden within the said Lordshipp & mannor to be sett fforfeited or Imposed & payable or happening at any time to be payable by any the Inhabitants of or within the said Lordshipp or mannor of Cassiltowne or the Limits or bounds thereof & also all & every the powers & authoritys hereinbefore mencôned for the holding and keeping the said Courts leete and Courts Barron from time to time & to award and issue out the Customary writts to be issued and awarded out of

the said courts leete and Courts barron to be kept by the said John palmer his heirs or assigns forever or his or their Stewards deputed and appointed with full & ample power & authority to destrayne for the rents services & other sumês of money payable by reason of the premises and all other lawfull remedys & meanes for the having possession Receiving Levying and Enjoying the premises & every part and parcell of the same and all wastes strays wrecks Deodands goods of fellons happening & being forfeited within the said Lordshipp & mannor & of all & every sune & sumês of money to be payd as a post fine upon any fine or fines to be Levied of any lands Tenements or hereditaments within the said Lordshipp or mannor of Cassiltowne, together with the Advowson & Right of patronage & all & every the church & churches erected or to be erected or established in the said manor and lastly I the said Thomas Dongan by virtue of the power & authority aforesaid doe give & grant unto the said John palmer his heirs or assigns that all the Tennants of the said mannor shall & may at all times hereafter meet together & choose assessors within the said mannor according to such Rules ways & methods as are prescribed for Cittys Townes & Counties within this province by the acts of General Assembly for the defraying the publick charge of each respective Citty, Towne County & all such sumes of money so raised to collect & dispose of for the use aforesaid according as in the said act of General Assembly is established & directed To have & to hold all & singular the said mannor of Cassiltowne and premisses with their and every of their appurtenances unto the said John palmer his heirs & assigns forever to the only proper use benefit & behoof of him the said John palmer his heirs & assigns for ever. To be holden of his most sacred maj^{tie} his heirs & successors in free & common soccage according to the Tenure of East Greenwich in the County of Kent in his majesties Realme of England yielding Rendering & paying therefore yearly & every year for ever unto his most sacred majesty afores^d his heirs or successors or to such officer or officers as from time to time shall be impowered to receive the same if demanded one Lamb & eight bushells of winter wheate on the five and Twentieth day of March at the Citty of New York in lieu & stead of all services dutys & demands whatsoever. In Testimony of the premisses I have caused these presents to be Recorded in the Secretary's office and the seale of the province to be hereunto affixed the 31st day of March one thousand six hundred eighty-seven & in the third yeare of his majesties Reigne.

THO DONGAN

Seale.

By Command of his ex^{ncy}

J. S. SWINTON.

Att a Council held in New York the 31st day of March 1687 present His Excellency the Governo^r major Anthony Brockholls major ffrederick Phillipps major Stephanus Van Cortlandt Collonell Nicholas Bayard, this pattent was approved of. J. S. Swinton. Council may itt please yo^r Excellency the Attorney Gen^l hath perused this pattent and finds nothing containd therein prejudiciall to his Maj^{ties} interest.

Examined march 31st 1687.

JA. GRAHAM.

See 5 Pat. 141. *Palmer Grants*

Sir Edmund Andros Patent.
to Undated.

James Gyles. Recorded 5 Pat. 11.

See 5 Pat. 141. *Palmer Grants*.

1680, Dec. 21. Description of a survey of 88 acres of land, lying upon the north side of Staten Island, laid out for Peeter Johnson Gowanes, by Philip Welles, surveyor, [with draught.] 1 *Land Papers* 195.

1680, Dec. 21. Description of a survey of 88 acres of land, lying upon the north side of Staten Island, laid out for John Vincent by Philip Welles, surveyor, [with draught.] 1 *Land Papers* 196.

Patent.

Sir Edmund Andros Dated 30 December 1680.

to Recorded 5 Pat. 23.

Peter Jansen. Consideration, quit rent of one bushel of winter wheat.

Grants land lying upon the north side of Staten Island and in the reare of a part of Peter Jansens former lot, described as follows: Beginning at the southwest corner of Claes Ariens Ueght and stretching in breadth west 6° southerly 60 rods, from thence by the line of James Giles direct south 244 rods to the Cloave Meadow and from thence by the fresh Meadows east 26° northerly 66 rods and then direct north 220 rods, the whole containing 80 acres "there being Eight Rodd in breadth left in y^e Reare of y^e said former Lott for a highway" and with 8 acres of meadow to be laid out where most convenient.

Patent.

Sir Edmund Andros Dated 30 December 1680.

to Recorded 5 Pat. 27.

John Vincent. Consideration, one bushel of winter wheat &c.

Grants land upon Staten Island, bounded on the north side by the reare of Claes Ariants Vight stretching West 6° southerly 63 rods bounded west by rear lot of Peter Johnson, thence direct south 220 rods and from thence bounded by the fresh meadow east 26° northerly 68 rods and from thence direct north 188 rods; there being 8 rods in breadth by reare of Claes Ariants left for a highway. Containing 80 acres. Together with 8 acres of meadow to be laid out where most convenient.

Edmund Andros Knt &c Patent.

to Dated 30 Dec. 1680.

John Taylor (Serjant.) Recorded 5 Pat. 19.

Grants land lying upon the Great plain in reare of Coursen & Companys lots, ranging southwesterly 14° 196 rods, thence southeasterly 72° 66 rods, ranging thence northeasterly 14° 196 rods and thence ranging northwesterly 72° 66 rods by land of Coursen & Co. to the first station Bounded westerly by land of David Thomas; southerly by the commons; easterly by the land of John Fitzgarrett and to the northward by land of Coursen & Co. and by the highway. Containing 80 acres. Together with 8 acres of meadow, in all 88 acres.

Edmund Andros Knt &c Patent.
 to Dated 30 Dec. 1680.
 John Fitzgarrett. Recorded 5 Pat. 20.

Grants land lying upon the Great Plain in the reare of the land of Coursen & Co., ranging southwesterly 14° 196 rods; ranging thence southeasterly 72° 66 rods; ranging thence northeasterly 14° 196 rods; ranging thence northwesterly 72° 66 rods by the land of Coursen & Co. to the first station.

Bounded to the westward by land of John Tailor; to the southward and eastward by the commons; to the northward by the land of Coursen & Co. and the highway, with 8 acres of fresh meadow between the plain and the swamp. Containing 88 acres of upland and meadow.

Sr Edmund Andros Knt &c Patent.
 to Undated.
 David Thomas. Recorded 5 Pat. 21.

Grants tract of land on Staten Island in reare of land of Cornelius Coursen & Co. upon the Great Plain ranging southwesterly 14° 196 rods; ranging southeasterly 72° 66 rods; northeasterly 14° 196 rods; ranging northwesterly 72° 66 rods by land of said Coursen & Co. to first station.

Bounded to the westward by the meadows and swamp; to the southward by the commons; to the eastward by the land of John Taylor; to the northward by the land of said Coursen & Co. and the highway; with 8 acres of fresh meadow lying to the west of the said land. Containing 88 acres upland and meadow.

PART V.

PHILIP WELLES GRANTS.

1680, Nov. 10. Description of a survey of 180 acres of land, lying on the northeast side of Staten Island, joining the northwest side of the farm of Col. Francis Lovelace, laid out for Philip Welles by Ro: Ryder, surveyor, [with draught.] *1 Land Papers 171.*

Patent.
 Edmund Andros Dated 1 December 1680.
 to Recorded 5 Pat. 4.
 Philip Wells. Consideration, quit rent of one bushel
 of winter wheat etc.

Recites that "Whereas there is a certaine parcell or Tract of Land lying and being on the northeast side of Staten Island which by virtue of my warrant is surveyed and laid out for Mr. Philip Wells joyning to ye northwest side of ye Farme of Coll. Francis Lovelace beginning at a White Oak Tree by the Water side agt. Constables Hook & runns in Length by the east side of a small run one hundred Rodd to a marked black Oak Tree & from thence direct south two hundred Rodd to a marked Tree from thence in breadth west six Degrees southerly one hundred ninety two Rodd to a small white Oak & a great Rock stone from thence in Length Direct north three hundred Rodd by the Line of

parting s^d Lambert & Elis Duxbury thence I runn south three hundred rodd & in that course met severall antient markt trees & so proceeded & do find that within the last mentioned survey is contained one hundred fifty four Acres as will appear by the draft hereunto annexed. (See Plate V.)

May 26th, 1712.

AUG GRAHAM.

S. g^l.

PART VII.

LOVELACE AND DUXBURY GRANTS AND PETITIONS.

1687, March 5. Description of a survey of 340 acres of land, lying upon the east end of Staten Island, bounded on the north by the Kill van Kull, and known by the name of Loulace's Farme, laid out for Capt. Thomas Loulace, by Philip Welles, surveyor. (See Plate IV.) *2 Land Papers 213.*

William & Mary Patent.

Dated 19 March 1691.

to Recorded 6 Pat. 374.

Consideration, quit rent of £ 0.12.0
 Ellis Duxbury and payable annually on the feast of the
 Mary his wife. Annunciation of the blessed Virgin
 Mary at Fort William Henry.

Recites that "Whereas Capt. Thomas Lovelace of the county of Richmond was lately seised and possessed of a certaine farm or Plantacion in the said county commonly called or known by the name of Lovelace's farme on Staten Island."

Recites further "And whereas our loving subject Ellis Duxbury of the County of Richmond aforesaid who Married Mary the Neece of him the said Thomas Lovelace Deceased hath by his petition p^rsented to Maj^r Richard Ingoldsby our Commander in Chiefe of our Province of New Yorke and Territorys thereon depending as being the Neerest Heir unto the said Tho^s Lovelace deceased in this Province Prayed our grant and Confirmation of the said farme and Plantacôn Called Lovelaces farme on Staten Island Now in the Tenure and Occupation of him the said Ellis Duxbury."

Grants "All that certaine farm or plantacion commonly called or knowne by the name of Lovelace's farme on Staten Island in the County of Richmond aforesaid beginning by the bay att a Great flatt stone sett up on the north side of a small Runn that is to the south from the Water Place and is marked with the letter L and Runns in Woods west and by north eight degrees and forty five minutes northerly according to the compass, (there being eight degrees forty five minutes variation) from the northwestward sixteen chains to a tree marked on the side of the Hill and from thence south west and by west five degrees and fifteen minutes westerly twenty six chains to the Land granted to Captain John Palmer and from thence west and by north five degrees and forty five minutes northerly twenty-six chains to an oak tree marked with a great stone growing in the root of the tree which is a marked tree of the land of Phillip Welles and from thence by his line northeast and by east five degrees and fifteen minutes easterly thirty three chains to the southwest corner of the

Land of Lambert Johnson Dorland and soe by his reare east six degrees north-erly twenty chains to his corner marked tree on the side of a hill and from thence by his line of marked trees north seventy five chains to the Bank and soe forward to low water marke and from thence by low water marke Round-ing as it Runns to the first stone marked by a small runn being bounded east by the Bay south by marked trees of the land of Capt. John Palmer to the west by the land of Philip Welles and Lambert Johnson Dorland and north by the mouth of the Kill van Cull. Containing in the whole 340 Acres with 30 acres of salt meadow to be laid out in that body of meadows against Carterets Point near the meadow laid out for Philip Wills."

"Always provided that anything herein Contained shall not be taken or Construed to Barr or Deprive any nearer Heir or Heirs of him the said Thomas Lovelace Deceased of his or their Rights to the farme or Plantaciõn aforesaid if any such Heir be."

Petition Dated 13 June 1702.
of

Ellis Duxbury Recorded 3 Land Papers 69.
and Mary his wife.

"To his Excellency Edward Lord Cornbury his Magties Capt. Generall and Governor in Chief of the Province of New York & Vice Admiral of ye same and ye Honble Councell.

The humble petition of Ellis Duxbury & Mary his wife

Most Humbly Sheweth

That yor peters unkle Capt. Thomas Lovelace was possest of a certaine farme or small tract of land upon Staten Island in ye County of Richmond which hee peaceably enjoyed for upwards of 20 years And having no children sent for ye petr^s from Barbadoes, but before they had Arrived at New York was deceased his widdow hearing yt ye petr^r was come sent for them telling them it was her husbands desire they should have ye s^d ffarme & delivered them possession thereof (reserving to herself maintenance for her life) which they have enjoyed ever since the year 1689 having been att great charge in building, clearing & fencing &c.

Yor Petr^s humbly therefore prays yor Excellency and Councell will be pleas^d to grant them A pattent for the said land with such small covenants and Quitt Rent as other his Majties tennants in ye s^d County hold their land. And ye Petr^s as in duty bound shall ever pray &c."

August 21. Description of a survey of 340 acres of land, with 25 acres of salt meadow, lying on the north side of Staten Island, laid out for Ellis Dux-bury, by Pieter Cortelyau, surveyor.

3 Land Papers 69.

Petition Dated 5 Aug. 1708?
of

Ellis Duxbury. Recorded 4 Land Papers 126.

"To his Excell^y Edward Viscount Cornbury Capt. Gen^l & Gov^r in Chief of the Province of New York, New Jersey & Terries depend-ing thereon in America & Vice Admiral of the same &c.

The humble Petition of Ellis Duxbury.

Humbly Sheweth That whereas y^r Excell^y Petitioner did sometime ago obtain from Excell^y in Council an Order for Surveying the Land which he lives upon and has had in posession and the possession of his predecessors for upwards of Thirty years, which Survey was made according to the said Order & Returned into this office, and this was done to the End y^r Lord^{ps} Petit^r might obtain your Excell^s Patt^t for the said Land But the said Patent not being yet Expedited.

Your Excell^{ys} Petior^r doth therefore most humbly Pray y^e Lordship will please to grant him a Patent for thesaid Land, according to the said Survey, under such moderate Quit rent as unto y^r Excell^y in y^r great wisdom shall seem meet.

And y^r Lordships Petior^r as in Duty bound shall ever pray &c.

ELLIS DUXBURY."

Anne
by the Grace of God of Great Brittain
ffrance and Ireland, Queen,
Defender of the ffaith &c.
to
Ellis Duxbury and Mary
his wife.

Patent.

Dated 26 Aug. 1708.

Recorded 7 Pat. 385.

Consideration, quit rent
of 12 shillings current
money of N. Y. payable to the
Receiver General at the ffeast
of St. Michael the Archangel
at the Custom House in N. Y.

Recites: "Whereas our Loving Subject Ellias Duxbury by his Petition presented to our Right Trusty and wellbeloved Couzin Edward Viscount Cornbury Capt Gen^l & Gov^r in Chiefe of our Province of New York and Territories Depending in America and Vice Admirall of the same &c in Council have Prayed our grant and Confirmation for all the farme or Plantation Commonly Called and known by the Name of Lovelaces ffarme now and for many y^{rs} last Past in the Tenure or Occupation of y^e said Elias Duxbury scituate lying and being in the County of Richmond on the north side of Staten Island being by a small Run on the north side and from thence twenty degrees northerly sixteen chains to a black oak tree marked on three sides and from thence west twenty eight degrees thirty minutes southerly twenty six chains to a white oak tree marked on all four sides and from thence west seventeen degrees northerly twenty six chains to a white oak tree marked on all four sides and from thence east twenty eight degrees thirty minutes northerly thirty three chains to a white oak tree marked with the letters P. W. and from thence six degrees northerly twenty chains to a black oak tree marked on all four sides and from thence north seventy five chains to the Bank and so forward to low water mark and from thence by low water mark rounding as it runs to the first station by the small run. Being bounded to the east by the bay south by marked trees and to the west by the land late of Dyonus Teunisson and Lambert Jansen Dorlandt and north by the mouth of the Kill van Kull. Containing 340 acres more or less. And also twenty five acres of salt meadow against Carteretts Point being bounded to the northwest by y^e Maine Creek southeast by the Meadow of

Dyonnis Teunessen and a small creek northeast by Lambert Jansen Dorlandts Meadow * * the which Petition we are willing to grant * * *."

Grants lands so recited.

Record of the Probate	Will Dated 5 May, 1718.
of	Will Proved 22 October 1718.
The Last Will and Testament	Recorded, Liber 9 of Wills,
of	p. 3, N. Y. Surrogate's Office.

Ellis Duxbury, deceased.

In the Name of God, Amen.

I Ellis Duxbury of Staten Island in the County of Richmond and province of New York being in Good health and of Sound and perfect mind and memory Praised be Almighty God for the same do make and declare this my Last will and Testament in manner and form following (that is to say) first and principally I commend my Soul into the hands of Almighty God who Gave it trusting and assuredly believing to have free Pardon of all my Sin through the only merits of my Saviour Jesus Christ and my body I commend to the Earth to be decently Interred at the discretion of my Executors hereafter named and as for that Temporary Estate Wherewith it hath Pleased God to bless me, I Dispose thereof as followeth Viz I Give and Devise all that my Plantation or Tract of Land on which I now live Scituate and being in the County of Richmond and Province of New York, Together with the Tenaments hereditaments and appurtenance to the same belonging to the Corporation of The Minister Church Wardens and Vestry of Saint Andrew in the County of Richmond and to their Successors for Ever to and for the only use and maintenance of the present Minister and Incumbent of the said church, the Reverend Master Aeneas Mackenzie during his natural Life and after his decease to his Successors Ministers and Incumbents of the said Church of Saint Andrew at all time hereafter being Orthodox Ministers and of the church of England as now by Law Established but to no other use or uses whatsoever Except in Case of Voidance or Vacancy of such an orthodox minister Dureing Such Time I give the benefite and advantage of my said Plantation to the widow of the Preceding Incumbent until the be such an Orthodox Minister as a for Said Instituted and Indented into the said Church of Saint Andrew and I do make and appoint his excellency Brigadier Robert Hunter our Present Governour of the said province and his Successors Governours of the Same forever to see that the said Plantation or any part thereof according to the Patent Granted me under the Seale of the Said Province be not taken from or put to any other use or uses than is herein and hereby mentioned and Expressed and also to see that no Waste be committed upon the same by Inhabitants thereof by of any Timber or firewood other than for the use of the said Plantation. Item I give and bequeath one hundred pounds current money of New York for the severall uses following (that is to say) for and towards the Building a Vestry Room at the Discretion of my Executor and of the Corporation church Wardens and Vestry of Saint Andrews Church for time Being to build a handsome Porch for the church door to pale in the Church Yards and to buy a pail to Cover the Bier I Give and Bequeath ten pounds Current Money of New York to be Dis-

LIST OF PLATES.

PLATE I.

Map showing old farm lines in Castleton, Staten Island.

PLATE II.

Tracing from the original draft of a survey of land laid out for Andrew Norwood, Oct. 5th, 1676.

PLATE III.

Diagram showing relative positions of the northern grants of land made in Dec. 1680.

PLATE IV.

Tracing from the original draft of a survey of land laid out for Capt. Thomas Loulace in 1687.

PLATE V.

Tracing from the original draft of a resurvey of land laid out for Lambert Jansen Dortland in 1712.

PROCEEDINGS
OF
The
Natural Science Association
of Staten Island.

VOLUME VIII.

December 8th, 1900, to October 10th, 1903.

EDITED BY ARTHUR HOLLICK, SECRETARY.

NEW BRIGHTON, N. Y.

1903.

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PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION,
OF STATEN ISLAND.

VOL. VIII. No. I.

DECEMBER 8th, 1900.

The adjourned Twentieth Annual Meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the president Mr. Thos. Craig was elected chairman *pro tem*.

Reports of officers for the past year were read and approved as follows:

Secretary:

Number of active members on roll at date of last annual report.....	82
Resigned,	8
Deceased,	2
Dropped,	2
Elected	6
Leaving on roll at date.	76

Treasurer:

Balance on hand at date of last annual report	\$333.61
Receipts.	248 c9
	<hr/>
	\$581.70
Disbursements.	91 80
Balance on hand.	\$489 90

Curator:

Number of separate donations to the museum	9
Number of specimens included in the above	222
Classified as	
Mineralogy	113
Geology and Paleontology.	86
Botany	20
Entomology.	2
Antiquities	1
Number of societies and institutions on the mailing list	66
Number from which publications were received as exchanges.	50
Number of separate titles included in above.	63

The Natural History Society of Wisconsin and the Northern Indiana Historical Society were added to the mailing list during the year

The election of officers for the ensuing year resulted as follows:

President, Lester W. Clark, Sr ; Secretary, Arthur Hollick; Treasurer, J. Blake Hillyer; Trustee, Wm. T. Davis.

On motion the election of a curator was deferred and Mr Thos Craig was elected curator *pro tem*.

On motion it was resolved: that until further action be taken, the regular meetings of the Association, during the ensuing year, be held on the second Saturday evening of each month.

Dr. Arthur Hollick exhibited specimens and read the following account of

SOME RECENT FINDS OF FOSSILIFEROUS DRIFT BOWLERS,

Since our October meeting a number of Drift bowlders containing fossils have been found, two of which deserve special mention, not only by reason of the well-preserved fossils contained in them, but also because eight of these are additions to our previously published lists.

For the identification of species I am indebted to Mr. Gilbert Van Ingen of Columbia University;

1. Devonian (Oriskany) bowlder, found near Richmond:

- Eatonia peculiaris* Conr.
- Meristella lata* Hall.
- Metaplasia pyxidata* Hall.
- Megalanteris ovalis* Hall *

Spirifer arrectus Hall
Spirifer arenosus Conr.
 2. Devonian (Schoharie) boulder, found on
 Ocean Terrace.
Atrypa reticularis impressa Hall.
Conocardium cuneus Conr.*
Cyrtina hamiltonensis Hall.
Cyrtolites expansus Hall? *
Dalmanites anchiops Green:
Favosites sp?
Fenestella sp?
Mytilarca (Plethomytilus) arenosa Hall*
Pentamerella arata Conr.
Phacops cristata Hall.
Reticularia fimbriata (Conr.)? *
Rhipidomella alsa Hall.
Spirifer macrus Hall.
Stropheodonta callosa Hall.*

Stropheodonta demissa Conr.
Stropheodonta inaequiradiata Hall.
Strophonella ampla Hall.
Zaphrentis sp?

Many of the Schoharie species are abundantly duplicated. This is especially true of the *Atrypa*, of which there are a dozen or more splendidly preserved specimens, representing both interior and exterior impressions.

In addition to the above there were also found two boulders of Lower Helderberg limestone containing fossils, one on Fox Hills, the other at Prince's Bay,—but too much decomposed for accurate determination of the fossils.

*Species marked with an asterisk denote additions.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VIII. No. 2.

JANUARY 12th, 1901.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Howard R. Bayne was elected chairman *pro tem*.

Mr. Arthur G. Thompson, Rosebank, was elected an active member.

Mr. C. A. Ingalls was elected curator.

The following paper by Mr. L. P. Gratacap was read :

THE CLOVE VALLEY PLEISTOCENE
LAKE BASIN.

A paragraph quoted in our Proceedings of October 13th, 1900, taken from the "*Report upon New York's Water Supply*," etc., and referring to the geological import of the Clove Valley, recalls some speculations indulged in by the writer for many years, in regard to that interesting and formerly very beautiful depression. This valley is a topographical feature that strikes the geological observer at once and suggests a series of surmises in regard to its origin. It is essentially a serpentine-walled depression which owes its general form to conditions or agencies which date as far back as Archæan time. If the serpentine hills which surround it are the result of changed hornblende rocks (schists?), and if these represent metamorphosed igneous rocks, the depression may have begun at the time when these latter first appeared. It certainly does not seem probable that this valley was at any time solidly filled up with serpentine or other rock masses, and that it has been excavated by aerial fluvial, or glacial agents. The base-leveling of the surrounding serpentine hills is quite uniform and it is difficult to conceive of any action especially centralized which would have scooped

out the contents of this bowl, if its original surface had been continuous with the tops of the encircling walls.

Assuming then it was an original topographical feature, not unlike, on a greatly reduced scale, the gaps existing between parallel and subsequently confluent hill or mountain ranges, as in the Appalachian region, its later history offers a field for conjecture, which may be partially at least, helped by observation upon its present aspect.

It has its walls broken down at two points, which are somewhat in a line with each other, as if they might have been the exit and entrance of tides from the ocean, or common points in the course of a short stream. One of these openings occurs to the south, at the Clove, where the Midland trolley line connects with its Richmond Road branch, and the other to the north, along the line of the valley in which are located Britton's, Martling's and Brooks' ponds. It is probable that these gateways to the valley were formed in preglacial time, indeed in Archæan or earlier Palæozoic time. It seems to the writer that the Clove Road gap represents a breach effected by weathering and the attacks of oceanic storms while the valley northward is a river course or a passage way for the drainage of the serpentine highlands at a time when their elevation in all probability, exceeded their present altitude ten or more times, and has been worn down by aqueous or river erosion.

Of course glaciation, which so profoundly modified all surface features, affected the character of our valley. It changed it principally by leaving over it a blanket of drift, greatly filling up its original floor, and possi-

bly through an ice dam or a drift barrier, or both, for some time in its history converted it into a glacial lake. There seems to be some confirmatory evidence on this point, as on the northern slope of Ocean Terrace, hidden completely in the woods, there is a narrow shelf of earth and drift which suggests a remnant of an ancient beach—a smoothed and level shore strand. Again, on the east side of the valley, between Martling's and Britton's ponds, there is a high bank of glacial sand, which has been partially removed by artificial means, but which doubtless extended farther west and may have originally formed a dam at this end of the glacial lake. The surface of this sand bank is a level field and its elevation is approximately the same as the apparent fragment of the ancient shore bench on Ocean Terrace.

If this surmise is correct the character of the dam at the gorge through which the Clove road passes is a matter for further observation to determine. It was probably glacial. At any rate the uplift of the continental rim, after the glacial period, tilted the valley flooring northward, and the drainage forced its

way out along the section now occupied by the three ponds, and removed the western portion of the sand dam previously mentioned.

We have thus a preglacial basin traversed by a preglacial channel or stream-bed, which was succeeded by a post-glacial lake. The corroborative details of this theory or its refutation may afford an interesting field for research for the members of the Association.

RECENT LITERATURE RELATING TO STATEN ISLAND.

An Example of Deductive Reasoning.
Arthur Hollick.

The Plant World, Vol. iii. (Dec 1900) pp. 184, 185.

A popular article describing the discovery of the Mastodon's tooth in the Moravian Cemetery, with special reference to it as an example of reasoning from known facts to theoretical conclusions and the subsequent verification of the conclusions by the discovery of additional facts.

The original account of the discovery was published in our *Proceedings* of October 14, 1899.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 3.

FEBRUARY 9th, 1901.

The regular meeting of the Association was held at the residence of Mr. Lester W. Clark, with the president in the chair.

Mr. Wm. T. Davis exhibited specimens of and read the following memoranda on

ADDITIONS TO OUR LOCAL FAUNA AND FLORA

Lestes eurina. This small dragon-fly was taken on two occasions (June 18th and July 4th) at a small pond back of the Moravian cemetery. Five other species of *Lestes* have been found on the Island and six species are recorded from New Jersey. The present species is an addition to the printed list of New Jersey dragon-flies as well as to that of Staten Island (Journ. N. Y. Ent. Soc., vi. (1898), 195-198.)

Colias eurytheme. A specimen of this butterfly was seen in a field near Richmond on the 20th of last October. Not having a net with me the insect escaped, but it was approached to within less than a yard, so that the identification is certain. The species has been found in New Jersey and is met with rarely on Long Island, but has not heretofore been reported from Staten Island.

Oxalis corniculata, L. The yellow procumbent wood sorrel has been found as a weed about greenhouses on the Island.

Enothera laciniata, Hill. The sinuate-leaved evening primrose was discovered last June, growing as a weed in our garden at New Brighton, by Miss F. J. Thompson.

Ipomoea hederacea, Jacq. The ivy-leaved morning-glory was discovered last September, in a field near the old fort at Richmond.

Ilysanthes attenuata, (Muhl.) The false pimpernel was found in July, 1898, near Graniteville.

Diervilla Diervilla, L. (*D. trifida*). This shrub was reported from Todt Hill many years ago by Mr. G. W. Wright, but as far as I am aware no specimens were preserved and certainly none have been found in that locality in recent years. In June, 1897, a small clump of bushes belonging to this species was found near the bank of Betty Holmes' Brook, at Green Ridge.

Chrysopsis falcata (Pursh) Several specimens of the sickle-leaved golden aster were collected at Watchogue, in July 1893.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VIII. No. 4.

MARCH 9th, 1901.

The regular meeting of the Association was held at the Staten Island Academy

In the absence of the president Mr. E. C. Delavan was elected chairman *pro tem*

The committee appointed to consider the subject of renaming the streets and highways of the Island, where names have been duplicated, submitted the following

REPORT OF PROGRESS.

To the Natural Science Association of Staten Island.

Your Committee on the renaming of streets and highways begs to report as follows:

No meeting of the Committee has been held since the communication made to the President by Mr. Davis. After the last meeting of the Association it was apparent that a final report could not be made until a list of streets had been prepared for purposes of comparison and renaming. Such work has already been begun. The plan adopted is to prepare a list of all streets alphabetically arranged. The Robinson Atlas is being used for this purpose. By the next meeting of the Association it is expected that the list will be completed and all duplications ascertained and that the final report of the Committee will then be submitted.

Accompanying this report is [I.] the preliminary report of Mr. Davis, together with [II. and III.] the communications in relation to the matter, from Mr. George Cromwell,

President of the Borough.

Respectfully submitted,

LESTER W. CLARK.

For the Committee.

I.

To the President of the Natural Science Association.

Dear Sir:—At your request I have prepared the following list of a few of the streets, avenues and roads of the Island the names of which are duplicated. The list is accompanied by a few suggestions that may perhaps be of some use to the City authorities in renaming them.

Richmond avenue, Port Richmond

“ “ Clifton.

The first of these was originally known as the Church road, from the fact that it leads to the old Dutch Church, of which Dr. Brownlee was so long pastor. Church road is quite as euphonious and agreeable as Richmond avenue, and the old name should be restored. We still have the Richmond road, the Amboy road and the Fresh Kill road, and to change any of these would be a great mistake. The Boston road, which runs through a closely-built section of Bronx Borough, has a much more significant name than if it had been changed to Boston avenue or Boston street.

Washington avenue, Mariners' Harbor.
 " " near Huguenot.
 " " Grant City.

The first of these was originally known as the Old Place road, and we think that the name should be restored. Washington avenue, Grant City, could be called Grant avenue,

Broadway, West New Brighton.
 " Huguenot.
 " Tottenville.
 " Port Richmond

The second of these was originally known as Fox avenue, and the name could be restored. Broadway, Tottenville, might well be called Androvette street after the old Huguenot family by that name. Broadway, Port Richmond, might take the name of Draper street, after Dr. John W. Draper who resided on Cherry lane. The services of Dr. Draper and his two sons, to science and his tory should entitle their memory to a lasting place in the vicinity of their old home.

Central avenue, New Brighton.
 " " Mariners' Harbor.
 " " Tottenville.

Central avenue, Mariners' Harbor could be called DeHart avenue, after the old family by that name settled in the neighborhood since about 1700. Central avenue, Tottenville, could be called Larzelere avenue, after the old Huguenot family settled in that quarter of the island.

Tompkins avenue, New Brighton.
 " " Clifton.

These avenues were named in honor of Daniel D. Tompkins, formerly Governor of the State of New York, Vice-President of the United States and Judge of the Supreme Court. He was long a resident of New Brighton, and for him Tompkinsville was named. Tompkins avenue, Clifton, could well be called Appleton avenue, after that gentlemanly and good man John A. Appleton, who was so highly respected and lived so long at Clifton.

South street, West New Brighton.
 " " New Brighton.

The last named of these could be called Ferry street, as it leads to the ferry at St. George.

Prospect avenue, New Brighton.
 " " Tottenville.

The last mentioned could be called after the old Micheau family. We copy the following from Clute's History: "The first of the name, Paul, was sheriff in 1736, and member of the Colonial Assembly from 1748 to 1751; his son Paul, however, appears to have been a greater favorite with the people of the county; he was chosen to the Provincial Congress in 1775-6; County Clerk for 20 years from 1761; County Judge for 11 years from 1786, and State Senator from 1789 to 1792. His son Paul J. was Member of Assembly 1798 to 1802-3, and Benjamin, County Treasurer in 1787. There was never a more popular or influential family in the county, but they have all disappeared. They were residents of Westfield."

Prospect street leads from the Turnpike to Howard avenue, on Grymes' Hill.
 Prospect street joins Morning Star road, Port Richmond,
 Prospect street joins Clove road, West New Brighton.
 Prospect street joins the Richmond road at Stapleton

The second of these might be called Star street, and the third Curtis street, after Geo. Wm. Curtis. Neither of them has a prospect, whereas from the Prospect street leading from the Turnpike there is a truly fine view. Prospect street, Stapleton, could be called Shore street. It will be between the present Beach and Sand streets, and close to Wave street.

Union avenue, Mariner's Harbor.
 " " crosses the Turnpike near Chelsea Heights.

The old name for the last mentioned avenue was Chelsea road, and it should be restored.

Madison avenue, New Brighton,
 " " joins Post avenue, Port-
 Richmond,

The last mentioned might be called Jeffer-
 son avenue, after the President just before
 Madison. We have a Monroe avenue

Church street, Tottenville,
 " " Port Richmond,
 " " New Brighton.

The second might be called Brownlee
 street, after Dr. James Brownlee, so long
 pastor of the old Dutch Church, nearby.

Sand street, Stapleton.
 " " Mariners' Harbor.

The last might be called Mariner street.

Water street, Stapleton,
 " " West New Brighton.

The first mentioned might be called Staple-
 ton street. It leads through the center of
 of the village, by the side of Washington
 square.

Simonson avenue Mariners' Harbor.
 " " Clifton.

The last might be called Concord avenue,
 because it leads to the Concord Downs and
 Concord Village. Or, if the first name is to
 be changed, it might be called Quarry street,
 because it leads to the Old Place road, near
 the oldest trap-rock quarry on the Island.

Among the other names that are duplicated
 are:

Sherman avenue, New Brighton.
 " " joins the Morning Star
 road, Port Richmond.
 Elizabeth street, Port Richmond,
 " " West New Brighton.
 " " Stapleton.
 Brook street, Stapleton,
 " " New Brighton.
 Ann street, Port Richmond.
 " " West New Brighton
 Franklin avenue, New Brighton,
 " " Grant City.

Thompson street, Stapleton.
 " " Grant City.
 Egbert avenue, West New Brighton.
 " " near Egbertville.

This list includes part only of the dupli-
 cated names and, as it has been made from
 an old atlas, perhaps some of the names men-
 tioned have already been changed by the
 authorities.

Respectfully submitted,

WILLIAM T. DAVIS'

II.

New Brighton N. Y Dec. 27, 1901.

*Dr. Arthur Hollick, Secretary Natural Science
 Association of Staten Island.*

Dear Sir:—Your letter of the 4th inst. has
 been brought by me to the attention of the
 councilmen and alderman representing this
 borough, and the necessity of changing names
 of streets in cases where the names have
 been duplicated and also in some other cases,
 was apparent to them. They said however,
 that as yet nothing had been done in regard
 to the matter, and suggested that it would
 undoubtedly, assist them greatly if you would
 send to me for their use any suggestions that
 your association might make with regard to
 changes to be made.

One of the newspapers has taken an inter-
 est in the matter and is inclined I think, to
 endeavor to get from the citizens at large
 suggestions as to names and changes.

I should be greatly obliged to you if you
 would send me a report of such suggestions
 as your association has to make, in order that
 I may communicate them to the proper au-
 thorities.

The recently announced decision of the
 post office department to establish the free
 delivery system for Port Richmond Staple-
 ton and Rosebank next spring, affords an
 additional reason for the proper naming of
 our streets. Very truly,

GEORGE CROMWELL,
 President of the Borough.

III.

New Brighton, N. Y., Jan. 23, 1901.

*Dr. Arthur Hollick, Secretary Natural Science
Association of Staten Island.*

Dear Sir:—I am in receipt this morning
of your favor of the 29th ult., respecting the
progress being made by the Natural Science
Association in preparing a list of new names

for the streets of this borough. There is no
hurry whatever about sending in the list to
me, but as soon as you feel satisfied with it I
will be glad to have it and will call it to the
attention of the members of the local Board.

Very truly,

GEORGE CROMWELL,

President of the Borough.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 5.

APRIL 13th, 1901.

The regular meeting of the Association was held at the Staten Island Academy, with the president in the chair.

The committee on re-naming of streets and highways made a further report of progress and submitted a complete list of all street, avenue and road names used on the Island, with duplications partially checked off.

Mr. Frederick E. Partington and Mr. Percy R. King, New Brighton, were elected active members.

Mr. Wm. T. Davis read the following paper on

OLD STATEN ISLAND SCIENTIFIC, HISTORICAL
AND LITERARY ASSOCIATIONS:

We have seen in Mr. Morris' paper on "The Tompkins Lyceum," printed in our Proceedings for June 9th, 1900, that provision was made in the by-laws for a curator of natural history, who was to "have control over the arrangement and exhibition of all the curiosities and specimens in Natural History, presented to or deposited with the Lyceum." The Lyceum flourished in 1842 and for several succeeding years.

The following extract from the *Richmond County Gazette*, for June 4th, 1862, shows that at least one other attempt was made to establish a scientific society on the Island:

"A Meeting of Gentlemen friendly to the organization of a Scientific Association on Staten Island, was held at St. Julien Hotel on Saturday, the 31st day of May last of which

Albert O. Wilcox, Esq., was chosen Chairman, and Doctor T. W. Donovan, Secretary. The character and purposes of the Association having been explained, and a plan of organization submitted, the further consideration of the subject was postponed, and the following resolution adopted:

Resolved, That this meeting adjourn, to meet at the St. Julien Hotel, Tompkinsville, on Saturday, the 7th of June next, at 4.30 p. m., at which time and place all gentlemen friendly to the proposed Association and wishing to become members of the same are invited to attend."

The following notices copied from old newspapers show the existence on the Island of various other kindred associations:

"Public Library Meeting. At a large and respectable meeting of the citizens of Factoryville and its vicinity held at the Shakespeare Hotel on Wednesday evening, the 12th inst., for the purpose of establishing a Public Library, it was Resolved, that this meeting vote a general invitation to all those who feel friendly to the cause to meet at this house on the evening of the 21st inst, at 7 o'clock—Resolved, that the meeting adjourn to meet on the evening of the 21st inst, at 7 o'clock.

G. W. MATSALL, President.

N. S. Burger
D. V. N. Mersereau, } Secretaries.

Factoryville, Feb'y 13th, 1834."

Richmond Co. Free Press, Feb'y 29, 1834.

"The Young Peoples Literary Association of Tompkinsville" is mentioned in the *Sepoy* for March 5th, 1859. In the same journal for March 12th, 1859, occurs the following:

"Rev Henry Ward Beecher will deliver his Lecture: "The Burdens of Society," before the Staten Island Historical Society, in the Trinity Methodist Episcopal Church, North Shore (Factoryville), on Thursday evening, March 17th. Tickets (25 cents each) may be procured of either of the following gentlemen:—Nathan Barrett, George William Curtis, Charles Windsor, Theodore Parkman and Ab'm C. Wood—Also from Jacob B. Wood, Tompkinsville; Webley I. Edwards, Richmond; L. W. Goddard, New Brighton, or 17 William Street, New York, and at the door. Doors will be opened at 6½ o'clock. Lecture to commence at 7½ o'clock.

Nathan Barrett,
George William Curtis,
Charles Windsor,
Theodore Parkman,
George Tudor,
Ab'm C. Wood,

Lecture Committee.

North Shore, March 8th, 1859."

The Staten Island Horticultural Society that flourished in 1864, seems to have been largely a literary society. Before it Mr R. J. deCordova delivered his "amusing lecture upon Courtship and Marriage" (*Richmond Co. Gazette*, Aug. 10th, 1864); Mr. Thomas Dermot gave readings from Shakspeare (*Richmond Co. Gazette*, Aug 31st, 1864) and Mr John W. Carrington recited the poems "The Blessing of the Twelve Tribes," "The Old Chaise" and "Barbara Fleecy."

In 1866 there was a Richmond Co. Agricultural Society, (*Richmond Co. Gazette*, May 9th, 1866.) The writer has a diploma awarded to John C. Thompson in September 1868, "for best Bush Early Rose Potatoes."

From the foregoing it will be seen that at least two attempts were made in the past to encourage the study of natural history on the Island by means of associations, and also that there were other societies of kindred purposes. It seems a little remarkable therefore, that so few facts regarding the natural

history of the Island were recorded before the advent of our present Natural Science Association.

Dr. Arthur Hollick read the following

NOTES ON SOME STATEN ISLAND BIRDS

Lanius borealis Vieill.—On March 17th of the present year, while walking along Richmond Turnpike, near DeJonges' paper factory. I saw two birds apparently fighting, but in a few moments the larger one had grasped the other in its claws and was flying away. The victor was much too small for a hawk, so I was interested to know what kind of a bird it could be. Finally it fled across the road, not more than twenty feet away, and lit in a tree close by, with its victim still in its claws. It proved to be a northern shrike, or butcher-bird, which had captured a blue-bird.

So far as I am aware this is the first record of this species having been seen on Staten Island, although it ranges both north and south of here and breeds in this latitude.

Zamelodia ludoviciana (Linn).—On May 13th, 1900, a specimen of the rose-breasted grosbeak was seen at Sandy Brook. This species also has not before been reported from Staten Island, although we are within its breeding range. The date on which it was observed would indicate that it probably nested here.

Syrnium nebulosum (Forst).—In our Proceedings for April 11th, 1891, may be found a note on a nest of the barred owl, in the woods between Willow Brook and Bull's Head. On each succeeding year up to and including 1898 the nest was found occupied and the fact was recorded at our April meeting of each year. In 1899 the birds failed to appear for the first time and they were absent in 1900. It was reported to me that a specimen of the barred owl was shot in that locality in 1899, which probably accounts for the break at this date.

On March 31st of this year the tree in which the nest had been made for so many years was found to have been cut down, so that this interesting chapter in our local natural history may be considered as closed. Fortunately we have a set of the eggs in our collection.

Since the above memoranda were prepared I have received from Mr. Wm. T. Davis the following additional notes :

Butcher-birds have been seen by me as follows:

Jan. 31st, 1886—Near Bull's Head.

Dec. 19th, 1886—Near Four Corners.

Jan. 1st, 1897—In Moravian Cemetery. In company with Mr. Walter C. Kerr I watched the bird for some time.

Feb. 22nd, 1897—With Mr. Thos. Craig

and Mr. F. F. Hunt, at Mineral Spring near New Springville. The bird was singing from the top of a tree, the song resembling that of the cat bird.

Rose-breasted Grosbeak—On May 1st, 1892, one of these birds was seen in a small cherry tree near the highest point of the Island. The bird was pulling the blossoms and nipping the young cherry or ovary. The ground beneath the tree was quite strewn with the petals

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 6.

MAY 11th, 1901.

An informal meeting of the Association was held at the Staten Island Academy.

The following review was read by the Secretary :

RECENT LITERATURE RELATING TO STATEN ISLAND.

Clays of New York: Their Properties and Uses —Heinrich Ries, Bull. N. Y. State Museum, No. 35, Vol. 7 (June 1900), 8 vo., cloth, pp. 489-944, pls. 1-140 and map.

This is in general a complete scientific and technical, up to date dissertation, upon the clays of New York State, giving the geographic and geologic distribution of all the clay workings within the limits of the State; manner of quarrying; methods employed in manufacturing the various articles; analyses of raw material; tests of finished products, etc

In it Staten Island receives a large share of attention, both in the text and in the illustrations. Plate I (Frontispiece) and Pl. 81 represent terra cotta vases made at the factory of B. Kreischer's Sons, Kreischerville, and Pl. 78 is a view of Barnard College, New York, showing the terra cotta trimmings from the same factory.—Views of the interior of the factory are given on Plates 79, 80, 106, 107, 108, 109 and 111, while the exterior, on the water front, is shown on Pl. 110.

Two of the clay pits are represented on Plates 17 and 105 and figures of a number of our Cretaceous fossil leaves on Plates 18 and 19, as follows :

Pl. 18. *Rhamnus Rossmassleri* Ung. Tottenville.

Pterospermites modestus Lesq. Tottenville.

Laurus plutonia Heer. Tottenville.

Proteoides daphnogenoides Heer. Tottenville.

Tricalycites papyraceus Newb. Tottenville.

Eucalyptus Geinitzi Heer. Tottenville

Myrsine elongata Newb. Arrochar.

Myrica longa Newb. Arrochar.

Thinnfeldia Lesquereuxiana Heer. Princes Bay.

Pl. 19. *Proteoides daphnogenoides* Heer. Tottenville.

Laurus plutonia Heer. Tottenville.

Liriodendropsis simplex Newb. Tottenville.

Liriodendropsis simplex Newb. Princes Bay.

Moriconia cyclotoxon Deb and Etts. Princes Bay.

Populus apiculata Newb. (?) Arrochar.

These are of particular interest to us, as the specimens figured are all in our museum; they were collected and identified by members of our Association and were previously described in our Proceedings or in the Transactions or Annals of the New York Academy of Sciences.

The structure and geologic age of the clay

deposits at Kreischerville and Green Ridge are described on pp 607-611, including the following fact not before recorded locally:

"[sponge] Spicules have been observed in the fire clay at Kreischerville * * * In the Kaolin were discovered a number of diatoms, which Dr. Ward informs me are either *Coconeis placentula* Ehr., or *C. pediculis* Ehr. Their occurrence is also of great interest, as these Kaolins are known to be middle Cretaceous beyond doubt."

The following sections are given on p. 608:

"Boring at Kreischer's factory:

Sand and soil	30 ft.
Blue clay	90 ft.
White sand	2 ft
Sand and clay alternating	78 ft.
Total thickness	200 ft."

Also:

"The following record of a well bored for Bachmann's brewery at Annadale, S. I. * * * At a depth of 200 feet a bed of yellow gravel containing shells was struck. The gravel was 36 feet in thickness and beneath it was a bed of clay 10 feet thick. The latter was of a white and blue color and was said to resemble a fine pottery clay."

As this record appeared to be erroneous, either in regard to the locality or the name of the brewery, I endeavored to obtain some more definite information from the author, but as he had merely received it second-hand the result of my effort was not satisfactory. Bachmann's brewery is at Clifton.

On p 610 is the following analysis of so-called "Kaolin" from Campell's pit:

"Silicic acid and sand	92.70
Al 2 O 3 and Fe 2 O 3	5.70
H 2 O	.70
K 2 O	.35
	99.45"

On pp 742-43, under the description of building brick, are mentioned McCabe's yard at Green Ridge; Wood & Keenan's on Arthur Kill, and the Anderson pressed brick factory at Kreischerville.

On pp. 759 - 60 is mentioned the clay quarried near Rossville ("Roseville" in the Report) by T. Ryan, with tests for shrinkage, vitrifi-

cation, tensile strength, etc. The composition is given as:

"Silica	57.00
Alumina	29.20
Ferric oxid	4.80
Lime	.65
Magnesia	31
Alkalies	1.80
Water	6.10"

On pp. 763 - 64, under descriptions of the terra cotta industry, Kreischer's factory is given a prominent place and on pp. 788 - 90, under the subject of fire clays, is a more detailed description of the Kreischerville beds, which are stated to be the only ones at the present time, in New York State, from which fire clays are mined. — Shrinkage, tensile strength and refractoriness are discussed and the following analysis given of clay from a pit opened in 1897 near Killmeyer's hotel:

"Silica	47.40
Alumina	39.01
Ferric oxid	.15
Lime	trace
Magnesia	"
Alkalies	"
Water	14.10
	100.66"

This was found to be a white and highly refractory clay.

In addition to the above, mechanical analyses are given, showing the amounts of clay, silt and sand in several samples of clay from the same locality.

On p. 872, in a table of analyses of fire clays, No. 29, from Kreischerville, is given as follows:

"Silica	64.28
Alumina	24.76
Ferric oxid	.83
Lime	73
Magnesia	trace
Alkalies	2.35"

Dr. Arthur Hollick exhibited a specimen of and read the following note on

A RECENTLY INTRODUCED GRASS.

Festuca capillata Lam — On May 27, 1900, while walking across a field near Egbertville,

my attention was attracted to a single dense tuft of fine grass, with numerous, slender, fruiting spikelets, which was conspicuous in comparison with the coarser grasses which surrounded it.—The genus was readily determined to be *Festuca*, but the species was clearly different from any with which I was familiar, nor was I able to identify it subsequently, so it was submitted to Mr. Geo. V. Nash, of the New York Botanical Garden, to whom I am indebted for its' identification.

It is a European species, recently introduced, which is becoming naturalized in the Eastern United States. It had apparently not been reported at the time Britton & Brown's Illustrated Flora was first prepared

for publication, as it is not included except in the Appendix to that work.

Its' discovery here adds another species to our local flora.

MINOR NOTES.

Mr. Samuel M. Dix presented a portion of a pegmatite granite boulder, found at Stapleton, similar to the granite outcrop at Tompkinsville, but not common as drift material on the Island.

Dr. Hollick presented a specimen of limonite, from the old Todt Hill mines, representing a sample of a quantity recently collected for the New York State mineral exhibit at the Pan-American Exposition.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 7.

JUNE 8th, 1901.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Howard R. Bayne was elected chairman *pro-tem*.

The following memorandum from Mr. Walter C. Kerr was read:

SWARMING OF ALLORHINA NITIDA.

On Saturday June 7th, 1900, my attention was attracted to a swarm of what seemed to be bumble bees, around a bed of cannas in the grounds of the Richmond County Country Club at Dongan Hills. On investigation however they proved to be a swarm of beetles (*Allorhina nitida*). They were clustered about the cannas, some resting on the stems, others crawling down between the leaves and the stems, while some were burrowing more or less in the ground. Many were flying about, causing a loud buzzing, which quite imitated that of a swarm of bees. The number was not estimated but there were probably several hundred. Some were captured and given to Mr. Wm. T. Davis, who informed me that the swarming of another beetle of a closely allied genus had been before reported.

The following reviews were read by the Secretary:

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. *The Serpentine of Manhattan Island and Vicinity and Their Accompanying Minerals*. D. H. Newland. School of Mines Quarterly, xxii (April 1901) 307-317.

In this paper there is a separate article on the Staten Island serpentine, occupying pages 309-316, with figures 1 and 2, showing the microscopic structure of specimens from Martling's Pond and Pavillion Hill respectively.

In discussing the general characters of the rock the author says that typical specimens, on superficial examination, show little else than serpentine, with a few crystals or bunches of chromite and scales of talc and chlorite.

The fibrous habit is noted from the Pavillion Hill locality and the replacement of serpentine by amphibole crystals, which causes the rock to be more resistant to erosion and weathering and is usually marked by sharper contours in the topography, as indicated along the eastern and southern borders of the area. The lamination and jointing of the rock are mentioned and also the fact of the joint surfaces being slickensided as the result of pressure, which the author thinks may be due to some extent to the increase in bulk by alteration of the original minerals.

Microscopic examination of a specimen from the excavation made for the abandoned Germania Brewery at Four Corners show the rock to be largely composed of amphibole more or less serpentinized. Pyroxene, chromite, magnetite, chlorite and talc were also found.

Examination of the specimen from the vicinity of Martling's Pond showed in addition the presence of olivine and the Pavillion Hill specimen was found to be a dark, massive, completely altered serpentine, containing talc, cronite and magnetite, which the author con-

siders "to have been derived largely from amphibole and olivine."

He further says: "Talc schist and chlorite schist are developed along with the tremolite rock and their association is probably a genetic one * * *. The occurrence of these secondary phases of alteration on the border of the area naturally suggests an igneous contact." This latter hint is probably meant to refer to the presence of granite, which is known to occupy a position close to the eastern border, at the Tompkinsville station of the Rapid Transit R. R.

Following is given as a chemical analysis of a specimen from Four Corners:

Si O 2	. . . .	36.72
Mg O	. . . .	29.09
Al 2 O 3	. . . .	1.06
Ca O	. . . .	9.95
Fe 2 O 3	. . . .	6.59
Fe O	. . . .	1.53
Cr O 3	. . . .	49
C O 2	. . . .	.52
H 2 O below 110 C	. . . .	14.02
H 2 O above 110 C	. . . .	14.50
		<hr/>
		99.97

From the facts the author apparently concludes that our serpentine must be regarded as an altered igneous rock.

II. *Discovery of a Mastodon's Tooth and the Remains of a Boreal Vegetation in a Swamp on Staten Island, N. Y.*

Arthur Hollick, Ann. N. Y. Acad. Sci., xiv. (1901) 67, 68.

This is practically an elaboration of the papers printed in our Proceedings for Oct. 14, 1899 and Feb. 10, 1900. It refers to the mastodon's molar found in the swamp in Moravian Cemetery.

MINOR NOTES.

Dr. Arthur Hollick exhibited specimens of leaves of plantain, sweet clover and other herbaceous plants bleached to a greater or less extent, presumably by the action of sulphur vapors from the copper works on Constable Hook during the recent wet weather. The leaves were collected on Kissel Ave., West New Brighton, where all the vegetation was more or less affected.

Mr C. A. Ingalls exhibited a series of photographs of Staten Island scenery, part mounted on cards and part prepared in the form of lantern slides.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 8.

OCTOBER 12th, 1901.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. A. K. Johnston was elected chairman *pro tem*.

The secretary called attention to the death, since the last meeting, of Mr. Jere. V. Wright, who lost his life in the sinking of the steamboat Northfield, on June 14th.

Mr. J. Blake Hillyer also referred to Mr. Wright as one of the most enthusiastic supporters of the Association, who took a great interest in its work, attending the meetings, etc., but not taking an active part in the proceedings.

On motion the secretary was instructed to prepare a suitable minute, embodying the above facts, and also to record the deep regret of the Association at the loss which it has sustained in the death of Mr. Wright.

Dr. Arthur Hollick exhibited and read the following note on

TWO STATEN ISLAND SPONGES

On September 8, 1899, after a severe storm, the beach between Great Kills and Princes Bay, especially in the vicinity of the Woods of Arden, was thickly strewn with two species of sponges, in all stages of wear and tear, from those which had been freshly cast up to others which had been rolled along the beach for a sufficient time to convert them into smooth rounded masses. These latter were so abundant in places that they formed ac-

cumulations like the rounded cobble stones and pebbles of the beach shingle, and it was difficult to realize that they could have been derived from the open branching sponges. Specimens were sent to Professor R. P. Whitfield, of the American Museum of Natural History, who has kindly identified the two species represented as *Microciona prolifera* Ellis and Solander, and *Hircinia* sp? (probably *acuta*). The former is bright red when fresh, but dries to a dull brown color, as seen in these specimens.

Dr. Hollick also read the following:

GRAPE LEAVES BLIGHTED BY ACID FUMES.

At our meeting last June I exhibited specimens of leaves of several plants in which the tissue was more or less destroyed and the green coloring matter bleached out—presumably by the action of acid vapors from the factories on the New Jersey shore of the Kills.

Subsequently one of our residents submitted to me these specimens of grape leaves, showing the same effects, although the vines were growing within a green house. In order to make certain that a fungus was not responsible I turned them over to Professor I. M. Underwood of Columbia University who kindly examined them, and, while he would not assign any reason for the destruction, stated positively that there was no indication of a fungus growth. A chemical examination would probably be necessary in order to de-

termine the exact nature of the destroying agency and to fix the responsibility.

The secretary read the following reviews of
RECENT LITERATURE RELATING TO STATEN
ISLAND.

I. *Serpentines of Manhattan Island and Vicinity and Their Accompanying Minerals.* [Part II.] D. H. Newland, School of Mines Quarterly, xxii. (July, 1901) 399-410; illust. in text.

This is the concluding part of the paper which was reviewed in the June number of our Proceedings. Under the discussion of the mineralogy of the serpentines there are numerous references to Staten Island—most of them from works or articles with which we are familiar and many of which have appeared in our proceedings.

In regard to the origin of the serpentines the author concludes that the original rocks from which they were derived were of igneous character, while in age they are more recent than the upper members of the Lower Silurian. These conclusions are of considerable

interest to us, as those who have studied the serpentines of Staten Island most extensively were of the opinion that they represented metamorphosed sediments and that their age was pre-Silurian.

II. *Life in New York and Brooklyn Several Million Years Ago.* Gustavus Myer. New York Herald, June 9, 1901.

This is a newspaper reporter's attempt to write an account of the probable conditions which prevailed in Greater New York and vicinity during the Cretaceous and subsequent periods based upon a number of facts furnished by a member of our Association.

The sequence of events is rather mixed in the text and a somewhat pretentious picture occupies the centre of the page, in which a Cretaceous dinosaur and a Quaternary mammoth are wandering together through a red-wood forest.

Two plates representing our fossil leaves collected at Tottenville and Kreischerville, are also included

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 9.

NOVEMBER 9th, 1901.

The Twenty first Annual meeting of the Association was held at the Staten Island Academy, the president, Mr. Lester W. Clark, in the chair.

Reports of officers of the past year were read and approved as follows:

Secretary.

Number of members on roll at date of last Annual meeting.....	76
Elected	3
Resigned	8
Deceased,	2
Dropped from rolls for non payment of dues 2	
Leaving on roll at date	67

Treasurer:

Balance on hand at date of last Annual meeting.....	\$489.90
Receipts.....	203 35
	<hr/>
	\$693.25
Disbursements.....	\$312.98
Balance on hand	\$380.27

Curator:

Number of speciemen's donated to museum ..	101
--	-----

Classified as

Geology and Paleontology,.....	90
Botany.....	2
Zoology,.....	9

Additions to Library:

By Exchange—Bound Volumes, Pamphlets, Maps and other publications.	211
Subscription.....	57
	<hr/>
Total,	268
Volumes bound during the year.....	130

The election of officers for the ensuing year resulted as follows:

President, Lester W. Clark,
 Secretary, Arthur Hollick.
 Treasurer, J. Blake Hillyer.
 Curator, Chas. A. Ingalls
 Trustee, Wm. T. Davis.

On motion it was resolved that the regular meeting of the Association shall be held hereafter on the second Saturday evening of each month from October to May inclusive.

The unusual disbursements during the year were stated to be due to the binding of many volumes of periodicals, the purchase of quantities of boxes for specimens and board covers for pamphlets and other details connected with the proper arrangement and display of the library and museum

Mr Wm. G. Willcox, of West New Brighton, and Mr. J. Harvey Bostwick, of Grymes Hill, Stapleton, were elected members

A short course of popular lectures on scientific subjects was planned for the coming season, the details being left to the Executive Committee who will report upon them at the next meeting.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND,

VOL. VIII. No. 10.

DECEMBER 14th, 1901.

The regular meeting of the Association was held at the residence of Mr. Lester W. Clark, New Brighton, with the president in the chair.

The following were elected active members:

N. B. Day, New Brighton.
John De Morgan, New Brighton.
Norman S. Walker, New Brighton,
Wm. Y. Wemple, New Brighton
Walter Durbrow, West New Brighton.
W. B. Hayward, Tompkinsville.
J. P. Lough, Tompkinsville,

The Secretary presented the following paper:

LIST OF FUNGI, COLLECTED AT TOTTEVILLE,
OCT. 4th., 1890.

The specimens listed were collected on the occasion of a field day excursion by the members of the Torrey Botanical Club, and subsequently transmitted by Mrs. N. L. Britton to Dr. S. E. Jelliffe, to whom we are indebted for the identifications.

Dr. L. M. Underwood, of Columbia University, kindly attended to the final revision and systematic arrangement of the species

BASIDIOMYCETES.

Armillaria mellea Vahl.
Cantharellus cinnabarinus Schw.
Clitocybe laccata Scop.
Coprinus comatus Fr.
Hypholoma sublateritium Scheaff.
Russula emetica Fr.
Schizophyllum commune Fr.*
Tricholoma personatum Fr.
Lenzites betulina (L.) Fr.*
Polyporus oblectans Berk. (*P. splendens* Pk.)
Strobilomyces strobilaceus B. & C.
Boletus chrysenteron Fr.

Irpex fuscescens Schw. (*I cinnamomeas* Fr.)
Thelephora Schweinitzii Pk.
Stereum hirsutum (W.) Fr.
" *spadicium* Fr.
" *versicolor* (Schw. Fr.)
Clavaria argillacea Fr.
" *inaequalis* Mull.
" *pulchra* Pk.
Tremella mesenterica Retz.
Lycoperdon pyriforme Scheaff.
" *Wrightii* Bol
Scleroderma Bovista Fr.
" *Geaster* Fr.
" *vulgare* Hornem.*
Crucibulum vulgare Tul
Puccinia argentata (Schultz) Wint.
" *graminis* Pers.
Uromyces lespedezae (Schw.) Pk.
Ustilago maydis (D. C.) Wint. (*U. Zeae* (Berkm.) Magn.)
Coleosporium solidaginis (Schw.) Thum.
(*C. sonchi-arvensis* (P.) Lev.

ASCOMYCETES.

Leotia lubrica (Scop.) Pers.
Rhytisma solidaginis Schw.
" *acerinum* (Pers.) Fr.

A former list was published as special No. 11 of our Proceedings, in August 1890, which included the names of all the fungi in our collection at that time.

Those above marked with an asterisk * are also included in this previous list.

MINOR NOTES.

Dr. Arthur Hollick exhibited a collection of petrified wood obtained from Arizona, California and the Yellowstone National Park. The specimens comprised both exogenous and endogenous wood and showed all stages from partial to complete silicification.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND,

VOL. VIII. NO. II.

JANUARY 11th, 1902.

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the president Mr. J. Blake Hillyer was elected chairman *pro tem*.

The secretary, in behalf of the executive committee, gave the outline of a program for three public lectures to be delivered at the Staten Island Academy in the near future.

Mr. Wm. T. Davis exhibited three photographs of grave stones from the old Cruser burying ground at 'The Cove,' West New Brighton, and read the following paper:

HOMESTEAD GRAVES.

In our Proceedings for December 1889 and October 1890, issued as Special No. 9, under the heading "Homestead Graves" an account was given of such family burying grounds as were found about the old houses and farms of the Island. Since those articles were published several more grave stones and another burying plot have been discovered, which may be added to the previous records.

In the account of the Cruser burying ground, near "The Cove," West New Brighton, only the inscriptions on two stones found in an old vault, were given. The other three stones, which were supposed to have been buried about the premises, have recently been unearthed, and I am indebted to Mr Alexander S. Rowland for photographs of them. The

inscriptions are as follows:

(1.)

Hier onder rust her lyk van Gerrit Kroese overleeden den XIen Mey A. D. MDCCLX. oudt zynde LVII Jaren en XI Maanden.

(2.)

Hier onder rust her lyk van Cornelia Kroese Doghter van Gerrit Kroese overleeden den XVIIIen Mey A. D. MDCCLX oudt zynde XIX Jaaren.

(3.)

Here lies the Body of Closha, the widow of Garret Cruser, who de-
ceas'd March ye 21st Anno Domini,
1787, In the 77 Year of her Age.

Cut by Abner Stewart.

In the private burying ground situated in a little clump of trees on a hill-side near the shore at Princes Bay, five more stones have been found at a short distance from those before recorded. They were concealed by a tangle of bushes and vines at the time of the first visit, and their presence was not discovered until later. The inscriptions are as follows:

(1.)

Here lies ye Body of Liut Jacob Spragg, Aged 51 years, Dec'd Nov'r.
ye 14, 1745.

(2.)

Here lies ye Boyd of Henry Butler
son of Henry and Belicha Butler,
who departed this life October 22nd,
1786, Aged 33 years and 4 months,

God my Redeemer lives

And ever from the skies

Looks down and watches all my dust

Till he shall bid it rise.

(3)

In Memory of James the son of
Henry Butler, who Dep'd this Life
Oct'r. 22, 1786, Aged 27 years.

(4.)

Here lies the Body of Nathaniel
Butler, son of Henry and Belicha
Butler, who departed this life Jan-
uary 22nd 1815. Aged 46 years, 10
months and 1 day.

My friends I leave to weep and mourn

While in the silent grave I sleep

Prepare for death for you must die

And be Intom'd as well as I

(5)

Here Lies the Body of Henry Butler
who Departed this Life the 24th of
April, 1780, Aged 54 years.

By scratching away the dead leaves ly'ng
among the thick growth of briars in the little
woodland burying ground situated between
Richmond and New Springville, two small
home made grave stones were found. One
of them was badly broken and indistinctly
dated 1755. or possibly 1750. The other
reads:

Here Lies the Body of Nicholas
Dupuy; Jun; Dec'd March ye 4,
1753.

The homestead burying ground not pre-
viously mentioned in these records, is situated
but a short distance from St Paul's church on

the Amboy road Tottenville. It belongs to
the Wood family, and is planted with rose
bushes and old fashioned flowers. Alto-
gether it is one of the most pleasing private
burying grounds on the Island, but it con-
tains no inscribed stones

Mr. Davis also exhibited a complete series
of the frogs and toads thus far found on the
Island, preserved in formalin, together with a
specimen of the Swamp Tree Frog from Little
Falls, N. J., and read the following note:
AN ADDITION TO THE LIST OF STATEN ISLAND
FROGS.

In the list of Reptiles and Batrachians of the
Island, published in our Proceedings for Oct.
1884, as Extra No. I. the names of nine frogs
and toads are given. Curiously enough at
that time the bull frog (*Rana catesbiana*)
could not be added to the list, though Mr.
E. F. Neilson and I had searched carefully for
it. It certainly must have been very scarce
if present at all in Clove Valley. In recent
years, however, I have seen and heard in-
dividuals in the Clove Valley, and in Van
Wagenen's pond, near the Fingerboard road,
and at other localities. The specimen I have
to exhibit was given to me by Mr. Ira K.
Morris, and was captured on the south side
of the Island by a friend of his

The only additional frog likely to be found
on the Island is the Swamp Tree Frog,
(*Chorophilus triseriatus*) which I have collect-
ed at Little Falls, New Jersey.

MINOR NOTS.

Mr. Samuel Henshaw exhibited a section
of a pear tree trunk from West New Brighton,
showing borings made by the larvæ of an in-
sect two living specimens of which were in-
cluded. These were identified by Mr. Davis
as the larvæ of the Leopard Moth, (*Zeuzera
Asculi* Linn.) a memorandum upon which
was published in our Proceedings for March
18th, 1893.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 12.

FEBRUARY 8th, 1902

The regular meeting of the Association was held at the residence of Mr. Fred F. Hunt, New Brighton. In the absence of the president Mr. J. Blake Hillyer was elected chairman *pro tem*.

injury. Of course in every locality the conditions are somewhat different. The plants that are in danger of extermination in one place may be abundant in another. For this reason Mrs. N. L. Britton, whose article on

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

Enclosed with this will be found a reprint of the Proceedings for February, 1902, which please substitute for the copy previously sent.

of Native Plants," and lately the New York Botanical Garden has been presented with a fund, the interest of which is to be used for the same admirable purpose. The preservation of living plants in their native haunts has naturally received much attention in botanical journals, and the daily press has also done its part in serving notice upon the public, that they who ruthlessly pluck, dig up or burn the wild plants, are doing the community an

top of a flat rock near Four Corners, but a number of cows were turned into the wood and they speedily devoured the ferns along with much of the underbrush. The other stations for this fern, at Silver Lake, etc., have so often been burned over that it has been nearly exterminated. The burning of our woods year after year, has also destroyed most of the patches of Club-mosses, and some of the species that were abundant a few years

(2.)

Here lies ye Boyd of Henry Butler
son of Henry and Belicha Butler,
who departed this life October 22nd,
1786, Aged 33 years and 4 months,

God my Redeemer lives

And ever from the skies

Looks down and watches all my dust

Till he shall bid it rise.

(3)

In Memory of James the son of
Henry Butler, who Dep'd this Life
Oct'r. 22, 1786, Aged 27 years.

(4.)

Here lies the Body of Nathaniel
Butler, son of Henry and Belicha
Butler who departed this life Jan.

the Amboy road Tottenville. It belongs to the Wood family, and is planted with rose bushes and old fashioned flowers. Altogether it is one of the most pleasing private burying grounds on the Island, but it contains no inscribed stones

Mr. Davis also exhibited a complete series of the frogs and toads thus far found on the Island, preserved in formalin, together with a specimen of the Swamp Tree Frog from Little Falls, N. J., and read the following note:
AN ADDITION TO THE LIST OF STATEN ISLAND

FROGS.

In the list of Reptiles and Batrachians of the Island, published in our Proceedings for Oct. 1884, as Extra No. 1, the names of nine frogs and toads are given. Curiously enough at the time the Bull Frog (*Bufo catesbeiana*)

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The homestead burying ground not previously mentioned in these records, is situated but a short distance from St Paul's church on

as the larvæ of the *Scaphiopus* (Linn.) a memorandum upon which was published in our Proceedings for March 18th, 1893.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 12.

FEBRUARY 8th, 1902

The regular meeting of the Association was held at the residence of Mr. Fred F. Hunt, New Brighton. In the absence of the president Mr. J. Blake Hillyer was elected chairman *pro tem*.

Mr. Wm. R. Hillyer, New Brighton, was elected an active member.

Mr. Wm. T. Davis called attention to a movement, recently inaugurated by persons interested in plant life, designed to check and discourage the wholesale destruction to which vegetation in general is exposed by the wanton or thoughtless plucking and collecting of flowers and the breaking of shrubs and trees. New England botanists have formed a "Society for the Protection of Native Plants" and the New York Botanical Garden has received a "Fund for the Protection of Native Plants," the income from which is to be devoted to three prizes of \$50, \$30, and \$20, each, for the best essays, upon the subject of the preservation of wild plants, including shrubs, herbs and trees.

Mr. Davis then read the following

LOCAL NOTES ON VANISHING WILD FLOWERS.

The State of Connecticut has a law designed to protect its native flora. In the city of Boston there is a "Society for the Protection of Native Plants," and lately the New York Botanical Garden has been presented with a fund, the interest of which is to be used for the same admirable purpose. The preservation of living plants in their native haunts has naturally received much attention in botanical journals, and the daily press has also done its part in serving notice upon the public, that they who ruthlessly pluck, dig up or burn the wild plants, are doing the community an

injury. Of course in every locality the conditions are somewhat different. The plants that are in danger of extermination in one place may be abundant in another. For this reason Mrs. N. L. Britton, whose article on "Vanishing Wild Flowers," was published in *Torrey* in August last, has suggested that some notes of a local character could be given for Staten Island.

The chief destroyers of our local flora seem to be :

1. Fire.
2. Agriculture, building operations, and the wood chopper.
3. Cattle.
4. Indiscriminate picking of flowers.

The crowds of passengers on the Staten Island boats on Sundays and holidays in warm weather, bear away such enormous bouquets, that the wonder grows that there are any flowers left alive except daisies and golden rods, whose floral display can hardly be reduced by the energy of even the most vigorous east side pic-nic party.

The fern *Polypodium vulgare* though common enough northward, is rare on the Island, and here is a subject for protection. It once occurred in considerable abundance on the top of a flat rock near Four Corners, but a number of cows were turned into the wood and they speedily devoured the ferns along with much of the underbrush. The other stations for this fern, at Silver Lake, etc., have so often been burned over that it has been nearly exterminated. The burning of our woods year after year, has also destroyed most of the patches of Club-mosses, and some of the species that were abundant a few years

ago could now hardly be found.

The lilies, especially the Turk's Cap (we have very few Canada lilies), seem to suffer chiefly from the individual intent upon making a bouquet the size of a bushel basket. Their own conspicuousness is their chief enemy, as it is with some other plants, when man is taken into account.

We have known of many little patches of orchids, such as *Tipularia* and the moccasin flower that have been destroyed by fire, and we have seen localities picked clean of the flowers of the last named species. We once saw three children vying with one another as to who could collect the greatest number of moccasin flowers and the biggest bouquet of its aleas.

The wild columbine is nearly extinct on the Island, there being still a few plants at Tottenville. Probably all the destroying agents mentioned helped in the reduction of its numbers.

The Hepaticas suffer much from the constant wood fires, and all the flowers in sight are often plucked.

The erect Clematis (*C. ochroleuca*) on Todt Hill and on the sandy point of land at Watchogue, is one of the plants that should be saved in particular, for the reason that it is at present unknown elsewhere in the vicinity of New York. It is not reported from the whole State of New Jersey. The Country Club as tenant, and the president of the Borough as owner of the soil on Todt Hill, is each in a position to save it to the community.

The evergreen holly used to be abundant on the Island, and there were trees of good size on Richmond Hill. But "if I don't take it some one else will", was the motto of the neighbors, and every Christmas time saw it grow less. Until lately there were many little trees springing up on the hill, but last year the underbrush was cleared away and the ground burned over.

The flowering dogwood suffers from having many of its branches broken off in May and June, and lately some one has cut most of these trees from the woods on the westerly

side of Silver Lake; land which will perhaps some day be included in the proposed park.

Trailing arbutus used to grow in abundance near Huguenot and Richmond Valley, but it has literally been carried away. In several instances it has been destroyed by fire as well. When one considers how difficult it is to make the arbutus grow, in fact no one has been entirely successful in transplanting it to any extent, it will be realized that it is easier for man to build a sky-scraping office building, or some other considerable monument of engineering skill, than it is to readjust the nicely balanced conditions of nature, when they have once been disturbed.

I have seen a swamp burn on our Island for a week, the result of a careless fire, and at the end of that time more damage had been wrought to nature than could be repaired in probably several centuries of growth and decay. What then is to be done to save our wild flowers and plants? The answer would seem to be that nothing can be done except in the way of educating popular opinion and taste.

No doubt one of the most effective ways of doing this would be to bring the matter to the notice of the teachers in the public schools, when the enormity of setting fire to the woods and of pulling up and indiscriminately picking all the flowers could be explained to the children and thus teach them a reverence for things natural.

On motion Mr. Davis was requested to obtain further information in relation to the subject and to report at the next meeting any suggestions in regard to work which might be undertaken in order to assist or encourage the movement.

Mr. Davis also exhibited specimens and read the following memoranda:

TWO ADDITIONS TO THE LIST OF STATEN ISLAND PLANTS.

Hypochaeris radicata L. This composite is well established on the Island, having been found at three stations. In the grounds of the S. R. Smith Infirmary it persists in

spite of the mowing machine. It is also to be found on Todt Hill, and in a field near Egbertville it grows in great abundance.

An interesting habit of the plant is the closing of its flowers early in the afternoon, even if the sun be shining. I am indebted to Dr. N. L. Britton for verifying my identification of the specimens.

Taraxacum erythrospermum Andr \acute{e} (Red seeded Dandelion). The specimens of this plant exhibited were collected on the side of the Egbertville road near Egbertville. It has however been found growing in some abundance in the trap-rock quarry at Graniteville.

In the first locality it grows in the deep shade but in the quarry it is associated with the Knapweed and occupies, as that plant generally does, a dry exposed situation.

THE BAG OR BASKET WORM.

Mr. Fred. F. Hunt referred to the injury to shade trees wrought in recent years by the 'bag' or 'basket worm' (*Thyridopteryx phœnæformis* Haworth) and exhibited specimens of the species in all stages of growth together with its cocoons. These latter may be seen in great abundance this winter, suspended from the branches of many trees in the vicinity. Mr. Hunt suggested that some action might be taken by the Association to assist in abating or mitigating the nuisance by urging property owners to remove and destroy the cocoons now, while they may be readily seen, and thus prevent the eggs from hatching next Spring.

The following letter from Mr. Walter C. Kerr, relating to the matter was read:

New York, Feb. 7, 1902

Fred F. Hunt, Esq., New Brighton, Staten Island, N. Y.

Dear Mr. Hunt:—Referring to our conversation this morning about the bag worm cocoon which so abundantly infests the trees on Staten Island this winter I would say that I most heartily approve of your suggestion that the Natural Science Association take some move towards their destruction before

Spring, provided a practical method can be planned for effecting this.

I am quite sure that such moves are only worth making when they are efficient and reasonably complete. In this case completeness could not extend to the forests of the Island but there seems to be no good reason why it should not extend to all the shade trees and other valuable trees well within the settled portions especially the trees which extend along the streets and lawns.

Doubtless personal effort is most effective, but I believe it to be too limited. In making such a move against the threatened plague of the coming season the following occurs to me:

1. Strong words of warning, put in language that will be understood and which will plainly state that these trees are threatened with destruction if this remarkable crop of cocoons is not handled now, should be put in the papers, not only once but repeated again and again, to keep it before the public and the papers should be requested to draw editorial attention to the articles.

2. A very simple cheap circular might be printed and by a special permit of the Post Office Department be placed in every mail box on the Island without addressing. This I think the Department would permit, although contrary to custom, because of its being for the public good. These circulars to be sent to each of the postmasters in packages with instructions how to deliver them.

On these circulars might be printed a small half tone cut showing just what the cocoon is, so that comparatively ignorant people will understand.

3. Some practical means should be suggested for removing the cocoons, for obviously their removal must be accomplished by some means commensurate with their number and distance from the ground. Possibly by a sharp hooked knife attached to the end of a long stick which would reach most of the low trees to which these cocoons are chiefly attached or possibly a wire in the end of a long pole, with the end bent over at an angle

and hammered into a sharp V shape could be hooked over the cocoon in such a way as to easily pull it down.

4. Explicit instruction should be given that the cocoons when thus removed should be collected and burned.

5. Possibly it would be well for the Association to consult with the U S. Department of Agriculture, Division of Entomology, or the nearest Agricultural Station of this Department (which probably is at Cornell University) asking advice regarding the best

methods.

In any event, I think whatever is done must be of such a nature as shall alarm the people as to the menace which these cocoons are to the shade trees and insure a practical mode of dealing with them.

On motion, Mr. Hunt was requested to communicate with the proper State and National institutions or departments, asking for advice on the subject, and to report at the next meeting.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND,

VOL. VIII. No. 13.

MARCH 8th, 1902.

The regular meeting of the Association was held at the residence of Mr. Chas. P. Benedict, West New Brighton. In the absence of the president Mr. Wm. T. Davis was elected chairman *pro tem*.

The secretary reported that arrangements had been made for two public lectures at the Staten Island Academy: the first on Wednesday, March 19, by Mr. Cornelius Van Brunt, on "Wild Flowers in and about Greater New York," and the second on Wednesday, April 9th, by Mr. E. B. Southwick, on "Our Insect Tenants."

The following were elected active members:

Wm. F. Fox, New Brighton.
Wm. H. Mitchell, Port Richmond.
Jas. V. Burkman, West New Brighton.
L. H. Achilles, " " "
Reade Benedict, " " "
H. E. Heal, " " "

The secretary referred to the death, since the last meeting, of Mr. A. A. Yates, and stated that Mr. Yates had been practically the only person connected with our public school system on the Island who seemed to realize the importance of nature study, so that his death is a loss both to the community in general and to our Association in particular.

Mr. Wm. T. Davis also referred to the same matter and submitted the following memorandum, which was ordered spread upon the minutes and printed in the Proceedings;

Our late member Mr. Albertus Austin Yates, who

died after a brief illness at his home on Carey Ave., West New Brighton, on the 13th of February, was born in Kingston, New York, and came to Staten Island a number of years ago. For some time he was principal of the public school on Andros Ave., Mariners Harbor, and later was supervising deputy of seven of the smaller public schools, having his headquarters at New Dorp.

It was while living at Mariners Harbor that he became interested in nature study, and he exhibited considerable enthusiasm in the way of identifying all of the birds and trees in the vicinity of his home. In the winter of 1899-1900, the red cross-bill occurred in considerable numbers about New York, and Mr. Yates reported that he had seen several of the birds on the cones of a pine tree in the Moravian Cemetery. Their occurrence here was not however recorded at the time. In October, 1893, he reported having found a Carolina rail, dead, in the Clove Valley, and in fact, always, on his way from one school to another, he had an eye for the birds and the trees by the road-side.

It is said that we can judge a man by the questions he asks and Mr. Yates was an adroit questioner, and quickly enough got to the bottom of the subject. He was also a kindly man and was always ready to put himself to considerable trouble, if necessary, in order to serve his friends.

Dr. Arthur Heilick suggested that some record should be made in regard to the destruction wrought by the recent storm, and read the following

NOTES ON THE ICE STORM OF FEB. 21ST.

On four previous occasions since the date of our organization, more than twenty years ago, we have suffered from storms sufficiently severe to make them matters of record in our Proceedings. The first was that of the great blizzard of March 12th-13th, 1888, the second and third the gales of August 24th and 29th,

1893, the fourth that of May 20, 1894.

On all of these occasions special attention was called to the injury wrought to vegetation, but it is doubtful if there has been, in the memory of anyone now living, such havoc and destruction in connection with our trees, as that which was caused by the ice storm of February 21st of this year. Similar storms have occurred nearly every winter, but never before did the accumulation of ice on the trees reach such magnitude or produce the disastrous results that ensued from this one.

The storm conditions began early in the morning with a fall of phenomenally large snow flakes, which turned to rain and finally to sleet. Every exposed object became gradually encased in a constantly increasing thickness of ice and finally, about nightfall, the overburdened trees began to give way. Nearly all lost a greater or less number of their branches or limbs, many had their tops broken off, others were split where forked and some were laid prostrate on the ground.

The general effect is known only too well to all of us, but perhaps all are not familiar with some of the details. For example, the actual weight of ice was probably unprecedented and fortunately a friend of mine made an experiment which will enable us to appreciate, at least approximately, what this amounted to. A section of a branch with its coating of ice was found to weigh $4\frac{1}{2}$ lbs. After the ice had melted the section weighed a fraction over 1 lb. If this ratio could be accepted as that which prevailed throughout, then each tree was burdened with about four times its own weight of ice. It should be remembered however that this ratio would vary with the thickness of the branch, so that the weight of ice compared to the weight of wood in an entire tree would be proportionally much less than indicated by the experiment. Nevertheless this gives a striking idea of the weight to which the smaller branches had either to adjust themselves or to yield.

Evergreens suffered less than deciduous trees, probably for the reason that their foliage prevented the ice to a certain extent from reaching the inner branches. The slender tops of cedars were broken however in many instances and open, spreading trees,

like the white pines, suffered considerably.

Trees growing close together were able to support each other more or less and in consequence our wooded tracts do not present quite as great a scene of destruction in proportion to the number of their trees, as may be noticed in connection with the more isolated shade and fruit trees along our roadsides and near our dwellings although in certain areas, where trees specially liable to destruction occur in abundance, the effects are more marked. An instance of this kind may be noticed in connection with the splendid growth of beech trees on the shore of Clove Lake, where the devastation is almost complete.

Staten Island felt the effects of the storm to a far greater extent than either Manhattan or the Bronx, where comparatively little damage was occasioned. In the New York Botanical Garden, Bronx Park, all the ice had disappeared from the trees by the middle of the day of Feb. 23rd, but here scarcely any difference could be noticed until a day later.

Mr. Wm. T. Davis read the following

NOTE ON THE ICE STORM OF JANUARY 21,
1881.

The severe ice storm of February 21st, which caused such destruction among the trees of the Island, particularly the white maples, lindens, tulips and sassafras (the last kind being the most damaged of all), was considered by many people to be exceptional, and the "oldest inhabitant" in several districts, said that we hadn't had the like before. The following note on the ice storm of January 21st, 1881, made by me at the time, will show however that it was at least quite similar.

"The rain, which fell fast during the early morning, froze as soon as it struck a solid body. The consequence was that the trees were covered with ice about one third to one half of an inch in thickness, making them both brittle and heavy. The wind then blew a gale from the south east, causing branches to break off on every tree. Beside our house there is a large white maple, about sixty feet high, which has lost its top and most prominent side branches, some of them being from

three to four inches in diameter. The crashing of falling branches was heard on every side, and the destruction is very great."

The tall maple mentioned above, still showed the effects of the storm in 1893.

MINOR NOTES.

Plectrophenax nivalis (Linn.) Snow Flake or Snow Bunting

Mr. Davis mentioned that during the snow storm on the afternoon of Feb. 22nd following the severe storm of the night before, a number of these birds were seen on the upper part of Taylor Street and on Carey Avenue, West New Brighton. The snow bunting was last mentioned in our Proceedings of March 18, 1893 as having been seen in a field on Todt Hill on Feb. 26th of that year,

Mr. Davis also exhibited living specimens of young "walking-stick" insects (*Diapheromera femorata*) recently hatched from eggs deposited last year by an insect in captivity, which had been captured in Connecticut.

Dr. Arthur Hollick exhibited a copy of Valentines' "Manual of the Corporation of the City of New York, for 1859" which contains, amongst other interesting things, a view of the old Quarantine grounds and buildings, at Tompkinsville, as they appeared in May 1858. As these buildings were burned on Sept. 1st and 2nd of that year (see "The Old Quarantine. Its' Destruction and the Causes which Led to It," Dr. F. Hollick, Proc. Nat. Sci. Assn. S. I., Special No. 16, Oct. 1893.) this view is probably one of the last which was taken.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND,

VOL. VIII. No. 14.

APRIL 12th, 1902.

The regular meeting of the Association was held at the residence of Mr. J. Blake Hillyer, with the president in the chair.

The following were elected active members:

O. M. Curtis, Port Richmond

E. A. De Lima New Brighton

E. C. Hayward, Tompkinsville.

The secretary distributed copies of the essay on "Suggestions for the Preservation of our Native Plants," by F. H. Knowlton, which was awarded the first prize, in the competition of 1902, from the Stokes fund for the preservation of native plants and reprinted from the Journal of the New York Botanical Garden, Vol. iii (Mch. 1902) pp. 41-47, additional copies of which may be obtained on application by anyone interested in the matter.

The secretary also read a communication from Mr. E. P. Felt, State Entomologist, containing suggestions for mitigating the "bag" or "basket worm" nuisance in con-

nection with our shade trees and giving instances of what had been accomplished in other communities. This communication was submitted, together with one from Mr. E. B. Southwick, Entomologist to the Department of Parks, as a committee report on the subject by Mr. Fred F. Hunt.

Mr. E. C. Delavan read a paper describing a recent trip along the route of General Knyphausen's march from Staten Island into New Jersey, on June 6th 1780, illustrated with a series of photographs of most of the important localities and points of interest on the line of march.

Photographs showing the destructive effects of the ice storm of February 21st were presented by Mr. L. P. Gratacap and Mr. E. C. Benedict.

Mr. J. Blake Hillyer exhibited specimens of Drift fossils and an indian net sinker, found by Mr. Leavitt C. Parsons, on Harbor Hill.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 15.

MAY 10th, 1902.

The regular meeting of the Association was held at the residence of Mr. C. A. Ingalls, Port Richmond.

In the absence of the president Mr. Ingalls was elected Chairman *pro tem*.

The secretary distributed copies of an essay by Miss Cora H. Clark, entitled "New Missionary Work" which was awarded second prize, in the competition of 1902, from the Stokes Fund for the preservation of native plants; reprinted from the Journal of the New York Botanical Garden for April. The secretary also stated that this and the other prize essays published under the same conditions would be given as wide publicity as possible, as a beginning towards the attempt to check the useless and wanton destruction of our native wild flowers.

Dr. Arthur Hollick exhibited specimens and gave the following

NOTES ON OUR COMMON STEMLESS BLUE VIOLETS

At the time when our local flora was catalogued, more than twenty years ago, three comprehensive species of stemless blue violets were recognized, under the names *Viola cucullata* Ait., *V. palmata* L., and *V. sagittata* Ait. Since that time our ideas of what constitutes a species or variety have undergone considerable change, and a number of new species, or old species restored, are now recognized in forms previously included under one or another of those before mentioned.

In looking over my herbarium specimens I find that the following species and varieties are represented:

Under *V. cucullata* Ait., there is also *V. obliqua* Hill, and *V. papilionacea* Pursh.

Under *V. palmata* L., is *V. palmata dilatata* Ell., and *V. Brittoniana* Pollard.

Under *V. sagittata* Ait., is *V. emarginata* Nutt. (Le Conte), and *V. ovata* Nutt.

Six additions are thus made to our original list by merely examining herbarium material and there is no doubt that we shall also find *V. papilionacea domestica* (Bicknell) Pollard and *V. palmata sororia* (Willd.) Pollard to be common here now that attention has been called to them.

It is interesting to note that in nearly every instance the above forms were collected, and mounted on separate sheets, because they were recognized as differing in appearance from the species under which they were placed; and in this connection it is of special interest to recall that our late member, Mr. Geo. W. Wright, reported *V. delphinifolia* Nutt., from Port Richmond, which was admitted into the catalogue, somewhat doubtfully. He recognized the fact that he had found a violet which was not *V. palmata*, although closely resembling it, but did not realize that he had discovered a new species, which we now know as *V. Brittoniana*. The specimens from Mr. Wright's locality prove this beyond any doubt.

Mr. Wm. T. Davis read the following

NOTES ON THE BALTIMORE ORIOLE.

Now that the season of bird migration is at hand it may be of interest to mention the time of first appearance on the Island for a number of seasons past, of one of our most conspicuous birds, the Baltimore Oriole.

The record chiefly refers to the birds that first appear, and these are probably the same ones that build near my home at New Brighton. The Oriole usually makes his arrival known by his loud notes on some

Spring morning, and then may not be heard again for a day or two thereafter. No doubt in several instances I did not hear the first notes, and so did not record the bird until he had been present several days.

In Bird-Lore for April, 1899, Dr. A. K. Fisher gives the Baltimore Oriole among the birds to be expected at Sing Sing, N. Y., from May 1st to 5th, and in the same magazine for April, 1900, Mr. John H. Sage says that the Baltimore Oriole may be looked for at Portland, Conn., from May 1st to 10th.

The Staten Island records are as follows:—

May	2nd,	1880.	May	2nd.	1894
"	10th.	1885,	"	7th,	1895
"	9th,	1886.	April	30th,	1896
"	6th,	1887,	May	7th,	1897
"	7th,	1888.	"	10th,	1898
"	7th	1889.	"	8th,	1899
"	1st,	1890.	"	4th,	1900
"	5th,	1891.	"	11th.	1901
"	5th,	1892.	"	6th,	1902
"	6th,	1893.			

The date of April 30th, 1896 was during a period of a warm wave, when the barn swallows also arrived somewhat earlier than usual.

The Baltimore Oriole is usually silent during all of the month of July. About the 10th of August they commence calling again, and make their presence known until their departure for the South in September, I have heard them as late as the 26th of that month

SPECIMENS EXHIBITED,

Mr. Davis exhibited cakes of fused sand, caused by the burning of a haystack on a sand dune at Old Place.

Mr. A. B. Skinner exhibited a number of specimens of indian implements and parts of deer antlers, the result of recent collecting at several localities on the Island, notably at Mariner's Harbor.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 16.

OCTOBER 4th, 1902

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the president Mr. S. M. Dix was elected chairman *pro tem*.

The following were elected active members:

C. M. Porter, New Brighton.
Augustus Acker, New Brighton,
Henry B. Brownell, New Brighton.
Charles F. Hart New Brighton
J. R. Fairchild, New Brighton.
Governor Daniel Delehanty, Sailors' Snug Harbor.
Robert E. Robinson, West New Brighton.
Edward J. Wheeler, West New Brighton.
Edward P. Doyle, Port Richmond.
Geo. A. Middlebrook, Port Richmond.
Samuel Alexander Henszey, Stapleton.
Dr. J. E. Vidal, Stapleton.
Dr. Herman Beyer, Stapleton.
Joseph Neuburg, Stapleton.
Geo. S. Scofield, Rosebank.
Daniel S. Hage, Dongan Hills.
Lawrence A. Toepp, Richmond,

Dr. Arthur Hollick and Mr. J. Blake Hillyer were appointed a committee to arrange for a series of public lectures during the coming winter, in co-operation with the Staten Island Academy.

Dr. Arthur Hollick exhibited specimens of fibrous serpentine and other minerals and read the following paper:

NOTES ON RECENT EXPOSURES IN THE SOAPSTONE ROCK.

The drainage system now in course of construction in this vicinity, known as the Arietta

Street sewer, with its several branches, has exposed from time to time a series of sections through the soapstone rock, and brought to light many good specimens of the characteristic minerals.

The south-west corner of Westervelt Avenue and Second Avenue was known as a locality for fibrous serpentine a long time ago and some of our best specimens were obtained from there, so the progress of the sewer trench near this locality was watched with considerable interest. When it was reached a seam of this mineral was encountered, striking diagonally across Westervelt Avenue, in a south-west and north-east direction, and large masses were dug out, from which I selected these specimens. They are not as fine and silky as many previously obtained near the surface. The fibres are more compact, but they are unusually long, and in this respect we have no other specimens which can compare with them as some are three feet and more in length.

The compact texture and length of fibre are doubtless due to the fact that the part of the seam from which the specimens came was considerably below the surface and had not been subjected to weathering.

Apparently the contractor thought that it had some commercial value as most of it had been thrown in a separate place and was subsequently packed in barrels and removed.

Close to the serpentine seam was a band of massive green and red soapstone, unlike anything previously found in the vicinity, but similar to some of the disintegrated rock along the side of the Todt Hill road near Moravian Cemetery, where the red color is

due to the presence of limonite iron ore. produced by the weathering of the soapstone. (See Proceedings for Jan. 13th. 1900.)

Numerous specimens of talc, marmolite, dark green massive serpentine, and other characteristic minerals, were also obtained, from the broken rock piled up along the side of the sewer cut at many places.

RECENT LITERATURE RELATING TO STATEN ISLAND.

In the *New York Herald* of June 11th, 1902, is an account of the sale of the old Crocheron homestead at New Springville, under foreclosure of mortgage held by St. Andrews Church at Richmond. The article is illustrated with pictures of the homestead and the

church and one of Rev. Dr. Yocum.

In the *New York Tribune* of June 29th, 1902, is an illustrated sketch of the Patten House at New Dorp, in which is also included a picture of the Black Horse Tavern.

SPECIMENS EXHIBITED.

Dr Arthur Hollick exhibited a mineral substance, said to have been picked up at the Narrows just north of Fort Wadsworth and recently submitted to him for examination. The discoverers, for some unexplained reason, had an idea that it might have come from Martinique at the time of the eruption of Mount Pelee. It proved to be native sulphur and probably was part of a cargo of some vessel.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 17.

NOVEMBER 8th, 1902

The Twenty-second Annual Meeting of the Association was held at the Staten Island Academy.

In the absence of the President, Mr. Wm. T. Davis was elected chairman *pro tem*.

Reports of officers for the past year were read and approved, as follows :

SECRETARY

Number of members on roll at date of last annual meeting.....	67
Since elected.....	36
Resigned.....	1
Deceased.....	2
Dropped.....	1
Leaving at date.....	99

TREASURER.

Dr.

Balance from last year.....	\$380.27
Subscriptions to & sales of Proceedings.....	5.60
Interest on deposits.....	12.18
Membership dues.....	198 00
	\$596.05

Cr.

Printing.....	\$164 79
Postage, stationery, etc.....	40.47
Subscriptions to periodicals.....	19.67
Public lectures.....	35.00
Janitor.....	10 00
	\$269.93
Balance on hand.....	\$326.12

CURATOR.

Additions to the Museum :

Entomology.....	1
Botany.....	2
Mineralogy.....	7

Additions to the Library :

Number of societies and institutions from which exchanges have been received.....	43
Number of separate publications received in exchange.....	257
By subscription.....	83
Donated.....	70
By purchase.....	35

Mr. Manuel Johnson, New Brighton, was elected an active member.

On motion, it was *Resolved* that the regular meetings of the Association during the ensuing year be held on the second Saturday of each month, except June, July, August and September.

The election of officers for the ensuing year resulted as follows :

President, Howard R. Bayne.

Secretary, Arthur Hollick.

Treasurer, J. Blake Hillyer.

Curator, C. A. Ingalls

Trustee, Wm. T. Davis.

Mr. Wm T. Davis exhibited specimens of the Praying Mantis and read the following paper :

PRAYING MANTIS ON STATEN ISLAND.

Last Spring Mr. Philip Laurent of Philadelphia, sent me a few egg masses of *Tenodera sinensis*, or "Praying Mantis," a native of Japan, but which for the last few years has been established in some localities about Philadelphia. Two of the egg clusters were placed in the garden of my residence at New Brighton, and the remainder in two brier patches in the Clove Valley. From the eggs placed in the garden I am able to show two fully grown Mantids, which are truly remarkable as well as formidable looking insects. From the eggs placed in the Clove Valley I have been unable to find any results, having discovered no Mantids or their egg masses attached to the briers, as is the habit of the insect. If this Mantis could be established on our Island it could have no other than beneficial results, as they feed on caterpillars and other insects. The specimens shown were kept captive for some time and they subsisted on raw meat. The *Tenodera* belongs to the Orthoptera, and is akin to our "walking stick" insect, which, it may be well to add, was fairly common in the Clove Valley during the past Summer.

Mr. Davis also exhibited specimens of the Seventeen-year Locust and read the following memoranda :

SEVENTEEN-YEAR LOCUSTS IN 1902.

According to the newspapers we were to have a swarm of 17-year locusts in this locality during the past Summer. However, it was not to be expected that they would occur on Staten Island in any numbers, for seventeen years ago, in 1885, only a pupa skin and a detached wing were recorded from this locality (*see Proceedings for February 10, 1894.*) About the same evidence was collected this season. In June a 17-year Cicada was found in Mr. Leng's garden at West New Brighton, and later I found a pupa skin in the valley of Logan's spring brook. Our "locust year" will be in 1911. The U. S. Department of Agriculture distributed a circular early this year requesting information on the subject, as

the brood of Cicadas to appear had a wide distribution, being principally known in parts of New Jersey, Pennsylvania, Ohio and Illinois.

Mr. A. B. Skinner exhibited a living specimen of Muhlenberg's Turtle and gave the following account of the same :

MUHLENBERG'S TURTLE FROM SILVER LAKE.

The specimen exhibited was found in Silver Lake last September, and the species has not before been reported from the Island. Turtles and other aquatic creatures are occasionally liberated at Silver Lake and possibly the present specimen found its way there by that means. In Jordan's Manual the habitat of *Chelopus muhlenbergi* is given as Eastern Pennsylvania and New Jersey, and in the Zoology of New York DeKay mentions two specimens from Rockland County.

PROCEEDINGS
OF THE
NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. VIII. No. 18. DECEMBER 13th, 1902.

The regular meeting of the Association was held at the residence of Mr. Wm. Allaire Shortt, Tompkinsville, with the president in the chair

In the absence of the secretary Mr. Shortt was elected secretary *pro tem*.

Dr. H. W. Patterson, New Brighton, was elected an active member.

The following paper by Dr. Arthur Hollick was read by title :

SOME COMPARISONS BETWEEN RECENT AND PREVIOUS ANALYSES OF OUR PUBLIC WATER SUPPLIES.

At our meeting of Feb. 9th, 1895, I read a paper upon the subject of our water supply, in which was included a table of comparisons between two analyses each of the waters of the Crystal Water and Staten Island Water Supply Ccs.

These comparisons indicated a serious deterioration in the quality of the latter between the date of the first and last analysis, whereas the former, during about the same period, had undergone no important change.

Recently I was able to secure a number of subsequent analyses of the above and also of the waters from the New Dorp and Tottenville water supplies. For purposes of comparison the earliest and latest analysis of each is given, expressed in parts in ~~100,000~~^{100,000} as follows :

STATEN ISLAND WATER SUPPLY CO		
	June 30, 1883	Nov. 19, 1902.
Chlorine.....	0.879	39.2
Nitrites.. .. .	none	0.0002
Nitrates	0.0823	0.35
Free ammonia.....	none	0.001
Albumenoid ammonia	0.0014	0.003
Hardness before boiling.....	6.727	19.04
Hardness after boiling	3.967	19.04

Organic and volatile matter ...	trace	22.50
Total solids.....	13.0	102.90

CRYSTAL WATER CO.		
	Oct. 22, 1885	Oct. 30, 1902.
Chlorine.....	1.006	0.76
Nitrites.....	none	none
Nitrates	0.0329	0.0811
Free ammonia.....	trace	0.0015
Albumenoid ammonia	0.01	0.0035
Hardness before boiling.....	6.0	9.53
Hardness after boiling	5.0	7.91
Organic and volatile matter....	4.75	3.80
Total solids	12.50	13.80

SOUTH SHORE WATER SUPPLY CO (New Dorp.)		
	Jan. 9, 1899.	Oct. 30, 1902.
Chlorine.....	1.287	1.2
Nitrites.....	none	none
Nitrates	0.185	0.2458
Free ammonia.....	trace	0.0015
Albumenoid ammonia	trace	0.0015
Hardness before boiling.....	16.0	6.28
Hardness after boiling	12.0	4.67
Organic and volatile matter.....	2.0	3.2
Total solids.....	20.2	23.6

TOTTENVILLE WATER SUPPLY CO.		
	Jan. 6, 1899.	Oct. 30, 1902.
Chlorine.....	1.190	1.0
Nitrites.....	none	none
Nitrates.....	trace	0.0082
Free ammonia.....	0.003	trace
Albumenoid ammonia	0.003	trace
Hardness before boiling.....	18.88	12.79
Hardness after boiling	9.26	4.42
Organic and volatile matter ...	1.60	1.40
Total solids	21.10	21.60

A comparison of these figures indicates that whereas the waters from the last three sources of supply have varied but little, and are apparently free from any contaminating influence, that from the Staten Island Water Supply Co. has passed the suspicious stage and shows a deterioration in quality that is alarming.

The great increase in chlorine is almost certainly to be accounted for by the presence of salt water, which has been drawn into the wells from the Kills, through the ground, by the suction to which the wells have been subjected in the attempt to supply a constantly increasing demand, or which has found its way in from the surface during high tides but the increase in the other suspicious constituents can hardly be explained except on the basis of sewage pollution.

The presence of nitrites in perceptible amount and the increase in organic matter from a mere trace to 22.50, are alone sufficient to cause apprehension and should lead to immediate action by our municipal authorities.

The subject of our water supply is receiving more or less official attention just now, but apparently it is the quantity and not the quality which is considered to be the most serious problem. So far as the Staten Island Water Supply Co. is concerned however, there seems to be no question that the limit has been reached in both directions, which

implies that the pumping station at West New Brighton should be abandoned and a new source of supply be secured as promptly as possible.

From the scientific standpoint it would be a matter of considerable interest to know what are the chemical constituents of the solid matter in each of the waters, as these would probably indicate the character of the water bearing strata or the origin of the supply. Theoretically, on geological grounds, the future supply for Staten Island should be from deep wells located on the south side. In the plain region of New Jersey the depth to which a well should be driven in any locality in order to reach a water-bearing stratum, has become a matter of almost exact calculation and satisfactory results have also been obtained on Long Island. The same geological formation, the Cretaceous, is known to underlie the entire coastal plain and there does not seem to be any valid reason why the plain region of Staten Island should be exempt from the conditions which obtain to the east and south. Instead of planning to obtain our future water supply from New Jersey or Long Island, as has been advocated, it is the opinion of those who have made a study of the geology of the region, that at least a series of test wells should first be driven at a number of localities along the south side.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 19.

JANUARY 10th, 1903

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Wm. T. Davis was elected chairman *pro tem*.

The committee on public lectures in co-operation with the Staten Island Academy reported that a program of four lectures had been arranged, as follows.

Tuesday, Dec. 2nd, 1902, by Professor G. W. Ritchey, of the Yerkes Observatory, University of Chicago, on "Some Recent Astronomical Photographs."

Thursday, Dec. 11th, 1902, by Dr. E. O. Hovey, of the Department of Geology, American Museum of Natural History, New York, on "Volcanos, Ancient and Modern."

Thursday, Jan. 15th, 1903, by F. W. Skinner, C. E., Associate Editor of the Engineering Record, on "American Bridge Building."

Thursday, Feb. 5th, 1903, by Mr. Cornelius Van Brunt, on "The Canadian Rockies and Their Flowers"

The lectures already given were well attended, in spite of inclement weather on each occasion. The lectures are free and tickets may be obtained by anyone by transmitting a stamped and addressed envelope to the Librarian of the Academy.

The following were elected active members :

Arthur A. Michell, West New Brighton.

Leavitt C. Parsons, " " "

S. McK. Smith, New Brighton

Charles R. Tucker, New Brighton.

Alanson B. Skinner, Tompkinsville.

Otto G. Kan, Stapleton.

Philip Dowell, Port Richmond.

Mr Wm. T. Davis exhibited a complete series of the species of hawk moths thus far captured on the Island and read the following paper :

STATEN ISLAND HAWK MOTHS.

In Professor John B. Smith's catalogue of the *Insects of New Jersey*, there are mentioned a number of hawk or sphinx moths that are southern species, but which owing to their long flights are found occasionally near New York. Unfortunately, I have been unable to include any of these in this preliminary list, for although they undoubtedly occur on our Island, I have thus far failed to catch them. As an illustration of the flight of these insects I may quote from Mr. August R. Grote's *Hawk Moths of North America*. In referring to our Island, he says: "On one such occasion I discovered resting on a wild vine, which grew on the South Beach near the sand and the waters of the bay, a pair of the great green vine hawk *Philampelus pandorus*. One I took, but the other escaped me, flying directly over the bay and out to sea. So far as I could watch its arrowy flight, over the smooth expanse of ocean, it kept its course towards the Atlantic, cleaving the saffron colored air, now turning golden under the rays of the sun".

In a recent work on *Caterpillars and Their Moths*, by Ida M. Eliot and Caroline G. Soule, our native species of hawk moths and their caterpillars are figured.

They are also mentioned in Mr. Beutenmuller's *Descriptive Catalogue of the Sphingidae found within fifty miles of New York City*.

After each name in the following list I have mentioned the months when the species has been taken on our Island and I am indebted to my friend Mr. Oscar Fulda, of Stapleton, for some additions to my notes in this connection.

Hemaris thysbe Fabr. I have always found the typical *thysbe* in July and August and the variety *uniformis* in May and June.

Amphion nesus Cram. This insect often flies in the brightest of sunshine and may occasionally be seen about the flowers of the blackberry in June.

Thyreus abbotii Swains. May, June, July.

Deidamia inscripta Harr. June.

Deilephila lineata Fabr. July, Aug. Sept. Oct. 23rd, 1900. As an illustration of the powerful flight of the Sphingidae I may mention that one day in August, several years ago, I observed several English sparrows endeavoring to capture a *lineata*. The moth flew in circles, while the sparrows made vain efforts to head it off. Occasionally this species, which usually flies in the twilight of morning and evening, also flies at noonday. I have seen it in the brightest of sunshine, visiting the flowers of a thistle.

Choerocampa tersa Linn May, June, Aug., Sept. This insect has been taken at *Petunia* flowers, which are also attractive to other hawk moths.

Philampelus pandorus Hub. June, July, Aug. A specimen has been given me by Mr. A. B. Skinner, which was collected in the first part of November, at New Brighton.

Philampelus achemon Dru. June, July, Aug.

Ampelophaga choerilus Cram. July, Aug.

Ampelophaga myron Cram. July, Aug.

This and its congener are often attracted by the mixture called "sugar," ordinarily prepared for noctuid moths.

Protoparce celeus Hub. June July, Aug., Sept. This, like many other of the Sphingidae, is quite dazed when disturbed in the day-time. I once found one on a fence and threw it into the air. It flew about in circles for a considerable time before it selected a definite direction.

Protoparce carolina Linn. July, Aug. Sept. The Carolina sphinx and *celeus* visit the funnel-shaped flowers of the two species of *Datura*. Many of them are killed by the electric lights. I have found as many as ten specimens of *celeus* about one electric lamp.

Sphinx kalmiae S. and A. Aug.

Sphinx drupiferarum S. and A. June.

Sphinx chersis Hub. June, July.

Sphinx eremitus Hub.

Sphinx plebeius Fabr. May, June, July.

Ceratomia amyntor Hub. May, June

Ceratomia undulosa Walk. May, June, July, Aug.

Triptogon modesta Harr. The caterpillar has been found on the Island.

Smerinthus geminatus Say, Aug.

Paonias excaecatus S. and A. July.

Paonias myops S. and A. June.

Cressonia juglandis S. and A. June.

Mr. A. B. Skinner exhibited specimens of indian arrow points and pottery and read the following paper :

NOTES ON INDIAN CAMP SITES NEAR SILVER LAKE.

Several times during the past spring and summer, while walking about in the Clove Valley, and in the vicinity of Silver Lake, I was surprised to find occasional arrow points, flint chips, and other traces of aboriginal occupation. Nevertheless, no particular search was made until November 16th, 1902, when, strolling near Silver Lake with Mr. M. R. Harrington, of the American Museum of Natural History, we came across a fragment of a flint knife, in the middle of the path, leading from the Harbour Hill golf links to Logan's Spring Swamp. Although we searched about carefully, we did not find any more implements in the immediate vicinity, but when we reached the north-east end of the lake we found a number of quartz and flint chips and several scrapers, one of which, found by Mr. Harrington, was of the stemmed variety.

Only a short time before this I had discovered a spear head in the path at this point,

and a rude arrow head near by. Mr. Harrington, who is an authority on the subject, says this was probably the site of a prehistoric indian camp.

A continued search about the lake brought to light a number of chippings, flint, etc. from the wooded side, but none from the side on which the buildings are located.

On the same side of the lake, but at the end opposite camp site no. 1, we found many chips in a small area, and I was fortunate enough to secure a small and somewhat imperfect arrow point of a type not common in this vicinity. These articles were all we found on this occasion, but they suggested the possibility of another camp site.

The following day, Nov 17th, 1902, I determined to make an exhaustive search about both sides. At camp site no. 1 a few chips

were found but nothing else, while at camp site no 2 a portion of a black flint war point, a tiny fragment of pottery, together with many chips, was the reward. Several trips to this locality since then have yielded abundant chips, but no implements of any kind.

I have also located another camp site near the shore of Schoenian's Pond. In the road near the ice house many chips and portions of implements were found. During the past spring, near this locality, I found a handsome yellow jasper knife, a portion of a quartz warpoint, and a fine black flint arrow head.

We may expect that when the roads for the new park system are cut through, more traces of aboriginal occupation will be brought to light, in the vicinity of Silver Lake and the Clove Valley.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 20.

FEBRUARY 14th, 1903.

The regular meeting of the Association was held at the residence of Mr. Howard R. Bayne, New Brighton, with the president in the chair.

Mr. T. F. Kane, New Brighton, was elected an active member.

The secretary presented a copy of a bill recently introduced in the Assembly, the object of which is to enable the State to acquire title to the Billopp House and its surroundings, at Tottenville, and to preserve the same; also correspondence relating to the matter from Mr. A. De Groot, through whose active personal interest the bill was drafted, stating that a hearing had been appointed for Wednesday afternoon, 25th inst., before the Committee on Ways and Means, at Albany, and requesting that the Association exert its influence to secure favorable action by the committee. The secretary also read the following memoranda on

SOME PREVIOUS ATTEMPTS TO SECURE PUBLIC CONTROL OF THE BILLOPP HOUSE.

Numerous efforts have been made in the past, by public spirited citizens, to induce the Legislature to pass some kind of an act which would enable the State or County to secure control of the Billopp House, in order that it might be preserved, on account of its historical associations, and it may be of interest to recall the part that our Association has taken in connection with these efforts.

In 1889 a bill was introduced, similar to the one now under consideration, and at our meeting of Jan. 12th of that year a committee was appointed "with power to act for and to represent the Association in all matters pertaining to the Billopp House and its proposed

purchase for public property." This committee conferred with the representatives of the Aspinwall estate, which had control of the property, but nothing could be accomplished.

At our meeting of Dec. 13th, 1890, this committee, through its chairman, Mr. Ira K. Morris, submitted a report which was printed in full in our Proceedings of that date, accompanied by a wood-cut, showing the appearance of the house some fifty years previously, and on Sept. 11th, 1897, Mr. Morris read a paper on "Popular Errors Concerning Christopher Billopp," which may be found in Vol. vi, No. 9, of our Proceedings. About this time the Chamber of Commerce tried to arouse an interest in the matter and Mr. Morris was again actively at work as a member of that body as well as a member of this Association.

In our Proceedings of Sept. 9th, 1899, may be found reference to a rumor regarding impending legislation and in 1901 I had, as secretary, more or less correspondence, in trying to learn something about a bill identical with the present one, which was introduced by Assemblyman VanName, but failed to pass.

In view of these facts it would seem as if we ought to take advantage of the opportunity now offered and do what may be within our power to help along the pending legislation.

After discussion the following resolutions were formulated and adopted:

Resolved, that this Association heartily indorses the efforts now being made to acquire the Billopp House at Tottenville for public property.

Resolved, that a copy of the above resolution be transmitted to Assemblyman Chas. J. McCormack, together with any documents relating to the matter, or any references to sources of information, which may be in the possession of the Association.

Resolved, that the president appoint a committee, to consist of the secretary and two other members, who shall endeavor to be present at any hearing which may be held before the legislative committee having the act in charge, to urge favorable action by such committee; or who shall sign and forward to such committee, on behalf of this Association, a copy of these resolutions.

The president appointed Mr Geo. Cromwell and Mr. Geo. S. Scofield as the members to act with the secretary under the above resolution.

The secretary also read the following memorandum on

THE RENAMING OF OUR STREETS.

My attention has been called to the fact that at the meeting of the Board of Aldermen on Dec. 23d, 1902, the following resolution was submitted to the Committee on Streets, Highways and Sewers:

"Resolved, That the new street, commonly called Father Murphy's street, running from Richmond turnpike to Ward's avenue and located between Cebra avenue and Louis street, in the Borough of Richmond, be and the same hereby is designated and shall hereafter be known as Austin place, and the President of the Borough of Richmond is hereby authorized and requested to note the change on the maps and records of The City of New York."

At the meeting of the Board on Jan. 5th, 1903, the committee submitted a favorable report and the resolution was adopted.

This incident emphasizes anew the necessity for immediate action by some responsible body in this Borough, in the direction of preparing a list of street names, in order to prevent further duplication. The name "St. Austin's Place" has been used for a long time to designate a street in West New Brighton, between Bard and Davis avenues and this fact should have been known by the alderman from this ward and the above action

prevented.

In a communication received from Mr. Geo. Cromwell, President of the Borough, he suggested that the Association could be of material assistance to the municipal authorities when the matter of renaming the streets is undertaken and doubtless we could also secure the cooperation of the Chamber of Commerce. We have a committee on this subject which has been at work on a report for some time, but doubtless it was not appreciated that there was any immediate necessity for the completion of the report.

Correspondence relating to the subject was read from Mr. Lester W. Clark, chairman of this committee, and, after discussion, the president was authorized to appoint two additional members on the committee, and the committee was authorized to fill any vacancies which might occur in its membership. The committee was requested to prepare and submit, at the next meeting of the Association, on March 14th, a complete list of duplications and proposed changes in street names in the Borough; also that it confer with the President of the Borough and arrange for public hearings on any changes suggested, after the same have been acted upon and approved by the Association, and that the Chamber of Commerce be invited to co-operate in the matter.

Mr. Wm. Allaire Shortt and Mr. A. K. Johnston were appointed as the additional members of the committee.

Dr. Arthur Hollick read the following review and criticism:

RECENT LITERATURE RELATING TO STATEN ISLAND.

Origin of Certain Place Names in the United States, Henry Gannett, Bull. U. S. Geol. Surv. No. 197. Washington, D. C. 1902.

This is an octavo pamphlet consisting of an alphabetical list of about ten thousand names of villages, counties, towns, rivers, mountains and other political divisions and natural features, in all sections of the United States, together with memoranda on the origin or meaning of the names. Criti-

cisms and suggestions are requested, and, so far as Staten Island is concerned, both should be forthcoming.

It would be interesting to learn, in the first place, how the names in the list as a whole were obtained or selected. In regard to our locality it is difficult, for example, to understand why certain names were omitted, such as Stapleton, Port Richmond, New Dorp and New Brighton, when Tompkinsville, Tottenville, Kreischerville and Rossville are included. A more or less careful scrutiny, has failed to reveal any names that are connected with our important natural features, such as the Narrows, the Kill van Kull, etc., although these are in constant use in commerce and navigation and have far more than a mere local interest attached to them. The names Castleton, Westfield and Northfield look familiar but they all refer to towns elsewhere than on Staten Island. Clifton is listed as a "village in Green County, Ohio, named from the cliffs which bound the river at this point," but our Clifton, named from the steep banks which face the bay, is ignored.

In its relation to Staten Island, however, the reason for the incompleteness may be readily understood when the list of authorities and acknowledgements is scanned. There is no reference to our Proceedings or to any member of the Association and no hint as to how or through whom the few local names listed were obtained.

If a new edition of the the work is contemplated we would suggest that the compiler begin by consulting a file of our Proceedings, paying particular attention to Vol. v, No. 5. Special No. 21 (Staten Island Names. Ye Olde Names and Nicknames) and also that he place himself in communication with those of our members who are specially interested in our local history. Such a course of procedure would seem to be the logical one to pursue in any attempt to compile a work of this kind, and it might lead to the correction of the misnomer "Princess Bay," adopted some years ago by the United States Geological Survey to designate Prince's Bay, appar-

ently in order to obviate the use of the possessive, which is one of their rules of geographic nomenclature. The application of this mischievous rule would of course necessitate the change to "Prince Bay" but could not possibly sanction the substitution of the word "Princess," which entirely eliminates the family name of Prince, from which the bay derived its name.

Dr. Hollick called attention to two specimens of Drift bowlders and read the following memorandum in connection with the same:

TWO ADDITIONS TO OUR LIST OF DRIFT FOSSILS.

At our meeting of April 12th, 1902, it may be remembered that some fragments of Drift bowlders, containing fossils, collected by Mr. Leavitt C. Parsons, on Harbor Hill, were shown by Mr. Hillyer. These have been donated to our museum and have recently been subjected to critical examination. One is Lower Helderberg limestone, containing *Stropheodonta* sp? and the other is Chemung sandstone, composed almost entirely of the remains of brachiopods, amongst which are *Spirifer mesistrialis* Hall and *S. mesacostalis* Hall.

This latter specimen is of special interest to us as it represents the first indication which we have been able to record of the occurrence of Chemung sandstone as one of our Drift elements. It also adds two new species to our list of Drift fossils.

SPECIMENS EXHIBITED.

Mr. A. B. Skinner exhibited specimens of indian implements and pottery, representing recent collections in the vicinity of Linoleumville, Watchogue, Mariners' Harbor, Silver Lake and on Pavillion and Ward's Hills.

Mr. Chas. Humphrey exhibited a collection of butterflies, made personally while in the Dutch East Indies.

Mr. Wm. T. Davis exhibited living specimens of *Branchipus*, collected on Feb. 12th, in a pond near the Black Horse Tavern; also mounted specimen of *Cuterebra* (Rabbit Bot-fly) together with a bumble bee for comparison, and gave an account of the life history of each species.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 21.

MARCH 14th, 1903.

The regular meeting of the Association was held at the residence of Mr. Fred. F. Hunt, New Brighton, with the president in the chair.

Mr. Wm. T. Davis, for the Committee on Re-naming of Streets and Highways, reported that a complete list of all the street and highway names in use on the Island, including duplications, had been prepared, but that the report in its proposed final shape was not quite ready for submission.

On motion the report was accepted as a report of progress and the committee was continued.

The secretary, for the Billopp House Committee, reported that the Association had been represented by Mr. Wm. A. Shortt at the hearing before the Assembly Committee on Ways and Means and that Mr. Shortt had reported to the effect that he considered it very doubtful if the State would undertake to acquire the property.

On motion the report was accepted as a report of progress, and the Committee was continued.

The following were elected active members:

Winfield R. Koller, Port Richmond and Wm. MacDonald, Stapleton.

Mr. Sanderson Smith stated that he had been authorized to offer to the Association the mineralogical collection of the late Robert T. Robinson and the

collection of birds nests and eggs belonging to Mr. Beverly W. Robinson.

Voted: That the collections be accepted, with the thanks of the Association, and that the secretary confer with Mr. Smith and arrange for the transfer and placing of the same in the Staten Island Academy.

Dr. Arthur Hollick read the following paper:

THE LATEST MOVEMENT FOR PUBLIC PARKS ON STATEN ISLAND.

During the past month most of us have doubtless either received or seen the pamphlet of twenty-four pages, with map, entitled "Report on a Proposed Park System for the Borough of Richmond, New York City, prepared and submitted by the Committee on Parks of the Staten Island Chamber of Commerce." This represents the latest effort of the many which have been made towards acquiring land for public parks on Staten Island, and it seems to have been started in the right way.

The report consists of an account of the part which the Chamber of Commerce has taken in the movement, together with the report of its Committee on Parks, including descriptions of areas best suited for park purposes and a map of the Island with the areas colored in green. Several discrepancies may be noted between the descriptions of the areas and the areas as indicated on the

map, but as both are merely meant to indicate in a general way what is desirable, these discrepancies can be readily harmonized when exact boundaries, in accordance with careful surveys, have been determined.

Of special concern to the Natural Science Association are those areas within which are included many of our most striking natural or most interesting historical features. The former will probably be retained anyway, in any system which may be adopted, because they appeal to even the most superficial observer, irrespective of local interests, but the latter must look for protection to those who are specially alive to their importance for purely sentimental reasons and from feelings of local pride.

Amongst these historical features may be mentioned the Billopp House at Tottenville and the old British forts on the Low and Herpich properties at New Brighton and on Richmond Hill. It is certainly our special privilege to call attention to the advisability of having these included within any park system which the authorities may finally decide upon and to endeavor to arouse a general public sentiment in favor of this particular phase of the movement.

It may be remembered that our former president, Mr. Walter C. Kerr, made an urgent and eloquent appeal for public parks at our meeting of June 8th, 1895, and his address on the subject was printed in our Proceedings of that date. A committee was appointed and considerable work was done in the direction of arousing public interest in the matter. Shortly after this, however, the Chamber of Commerce was organized and Mr. Kerr suggested that it would be the proper body to take general charge of the matter. In accordance with this suggestion, on Nov. 14, 1896, the Association adopted the following

resolution:

“Resolved: that this Association express its approval of the resolution substantially as printed in the notice of the meeting dated Nov. 12th, 1896, of the Chamber of Commerce, and that it tender its co-operation in the furtherance of the desired end.”

It is therefore not only proper that we should assist this latest movement in any way which we may, but we are already pledged to do so.

Incidentally it may be remarked that our secretary is president of the Richmond County Park Commission, which is engaged in laying out Silver Lake Park, and Mr. Kerr is one of the Commissioners, while on the Park Committee of the Chamber of Commerce our Association is represented by Mr. Wm. T. Davis, Mr. John M. Carrere, Mr. E. J. Wheeler and Mr. A. K. Johnston, besides, as ex-officio members, Hon. Geo. Cromwell, Dr. Arthur Hollick and Mr. Louis L. Tribus.

The paper was discussed and the following resolutions were adopted:

Resolved: that this Association renews its tender of co-operation of November 14th, 1896, with the Staten Island Chamber of Commerce, in connection with the effort to secure a park system for Staten Island, and,

Resolved: that this Association request the Chamber of Commerce to make special effort to have the Billopp House at Tottenville and the old British forts at New Brighton and Richmond included in the suggested park system, and,

Resolved: that the president appoint a committee of three members to sign and transmit a copy of these resolutions to the Chamber of Commerce, or to attend any meeting of the Chamber which may be called to discuss park matters, and present the same in person.

The president appointed Mr. John DeMorgan, Mr. Fred. F. Hunt and Mr. Geo. S. Humphrey as such committee.

Mr. Sanderson Smith read an article on the Billopp House and its proposed

purchase by the State, from the N. Y. Times of March 8th, 1903.

Dr. Arthur Hollick read the following paper:

ANALYSES OF SOLID MATTER IN THE
TOTTENVILLE AND NEW DORP
WATER SUPPLIES.

In my paper upon our public water supplies, published in our Proceedings for Dec. 13th, 1902, I mentioned that it would be a matter of considerable interest to know what were the chemical constituents of the solid matter contained in the waters. Since then I have been furnished with the following two analyses, through the kindness of Dr. J. A. Deghuee, head chemist of the Department of Health:

	Tottenville.	New Dorp.
Silica.....	1.60...	2.32
Sulphuric Anhy-		
dride SO ₃ .....	.76.....	.824
Iron and Alumina		
Oxide.....	1.04.....	1.68
Lime.....	6.48	5.46
Magnesia.....	1.16.....	4.25

(The figures represent parts in 100,000.)

The relatively large amount of lime in the Tottenville water is difficult of explanation in connection with any facts now in our possession. There is no limestone in the vicinity and the amount of lime in the Drift and in the underlying Cretaceous clays is very small (See Proceedings, May 11th, 1901,) so that the origin of this constituent is a problem which awaits solution.

In the New Dorp water the relatively large amounts of lime and magnesia especially the latter, are to be expected, by reason of the close proximity of the serpentine rocks, and they point to the origin of this supply in the hills to the north, although the Drift in which the wells are driven contains more or less serpentine as morainial material.

Mr. Fred. F. Hunt performed a simple

test to show the solid matter in the New Brighton water supply by putting a pinch of phosphate of soda into a tumbler of the water and causing the lime and magnesia to show as a precipitate.

Mr. Nils Bergquist exhibited a small leech, which was discharged from a faucet supplied from the Crystal Water Co.

Mr. Wm. T. Davis submitted and read extracts from a list of additions to "Staten Island Names. Ye Olde Names and Nick-names," published as Special No. 21 of our Proceedings, on March 14th, 1896.

On motion the following resolution was adopted:

Resolved: that the Association express its appreciation of the work of Mr. Davis, and that he be requested to have the same published at his discretion, as a special number of the Proceedings, under such conditions as may be mutually agreed upon between the Association and Mr. Davis,

Mr. Davis also read the following paper, illustrated by a specimen:

NOTES ON THE TIME OF FLOWERING
OF A WHITE MAPLE.

The white maple (*Acer saccharinum* L.), commonly planted along our avenues and roads, blossoms at this season of the year, and for a number of seasons past I have noted when the first flowers appeared on a tree growing near my residence at New Brighton. The flowers on this tree are staminate, and the following table shows the time of their first appearance in each year noted:

1893, March 25th.	1898, March 5th.
1894, " 5th.	1899, " 10th.
1895, " 20th.	1901, " 26th.
1896, April 5th.	1902, " 12th.
1897, March 13th.	1903, " 9th.

The position of a tree has much to do with its time of flowering, and it will often be found that the tree on a sunny corner of a street will be in flower,

while the trees in the more shaded part of the row will not be so far advanced. The earliest date that I have for the blossoming of the white maple, is in the warm winter of 1889-'90, when a tree was found in flower on the 16th of February.

Mr. A. B. Skinner exhibited specimens of indian relics and read the following paper :

RECENT EXCAVATIONS IN INDIAN CAMP SITES AT MARINERS' HARBOR.

On the sixth of this month, while in the company of Mr. Chas. Benedict and Mr. Leavitt C. Parsons, I visited the old indian village sites, located in the vicinity of Arlington station, Mariners' Harbor. We found nothing more than a few points, etc. upon the surface, until we came upon a railroad cut made from the B. & O. R. R. to the Shore Road near Bowman's Brook. This cut runs directly through the richest of the Mariners' Harbor sites, and exposes shell pits and fire places at intervals, for some distance.

Scratching in the largest of these fire pits we found oyster and clam shells, split and charred deer bones, and a great quantity of fragments as large as the palm of a man's hand, and even larger.

The search was continued until the pit was entirely worked out and on completion we found we had portions of at least four vessels of different designs and workmanship. Unfortunately none of these can be put together to any extent on account of the fact that very little if any of the rims or bases were found, which statement holds true for the material from all pits in the vicinity, although Mr Parsons found, in one nearby, the bottom of a vessel which terminated in a curious little hump.

Not satisfied with the results of the search, rich as they were, I visited the site the following day with Mr. Wm. T.

Davis, and we proceeded to work the remaining pits. On looking over the surface for indications, we found a fragment of a beautifully decorated pipe, and much pottery, in the sand that had been carried off and dumped to form the road bed farther down, where the ground is swampy.

The first pit opened was quite near the Shore Road, and was very rich in split and cracked deer bones. This pit contained also portions of two arrow-heads, one of the bevelled-to-the-right variety, a hammer-stone, two pieces of cut antler, a fragment of bone showing notches made by a flint knife, a bone awl, a piece of the stem of a very finely ornamented clay pipe, fragments of pottery and other usual articles.

This pit we christened Pit No. 1, on account of its close proximity to the Shore Road. It was upwards of 100 feet north of the pit excavated on the previous occasion. It was about three feet deep by four broad. Between this pit and pit No. 2 were several small fire-holes, the majority of them being merely the edges of pits that had been dug out by the laborers and the contents thrown in the dump along with the sand. These all contained potsherds, bones, etc., but were not large or rich enough to deserve special mention, with one exception. This was a pit (No. 3,) situated a few yards south of No. 2, and it contained, besides the usual articles, a fine bone awl, made from one of the hollow bones of a turkey or other bird. This awl unfortunately was broken, before its value was recognized, but has been mended. While at work the good people of the vicinity flocked out to see. We were shown 'an Injun axe', and told that two others and 'a arer head', about 6 inches long and finely serrated, had been found there.

SPECIMENS EXHIBITED.

Mr. Fred. F. Hunt exhibited two specimens of Drift boulders,--both crystalline rocks,--one from near Huguenot, containing graphite; the other from the vicinity of Silver Lake, containing garnets.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII. No. 22.

APRIL 11th, 1903.

The regular meeting of the Association was held at the residence of Mr. C. A. Ingalls, Port Richmond, with the president in the chair.

Mr. Lester W. Clark and Mr. Wm. T. Davis, for the Committee on Re-naming of Streets and Highways, submitted a complete report, embodying the following features: 1st, a list of all the street and highway names in use on the Island, including duplications, alphabetically arranged, and with location indicated in each case; 2d, a separate list of the duplicated names, arranged in a similar manner; 3d, a list of suggested new names, appropriate to the different parts of the Island, based upon old local family names, events in local history or prominent natural features.

On motion the report was accepted and the committee was continued, with instructions to confer with Borough President George Cromwell in relation to the matter.

Mr. John DeMorgan, for the committee appointed to co-operate with the Chamber of Commerce on park matters, reported having presented the resolutions adopted at the last meeting, at the meeting of the Chamber of Commerce held on April 6th, on which occasion they were well received and the suggestions contained in them were adopted.

On motion the report was accepted

and the committee was continued.

The secretary read a letter of resignation as a member of the committee from Mr. Fred. F. Hunt, which was accepted and the president appointed Mr. Edward M. Stothers to fill the vacancy.

Mr. A. B. Skinner read the following paper:

LIST OF INDIAN VILLAGES AND CAMP SITES ON STATEN ISLAND.

In compiling the following list, I have been largely aided by Mr. Wm. T. Davis, who very kindly conducted me personally to many of the sites, and gave me information in regard to others. Thanks are also due to Mr. Charles Benedict and to Mr. Leavitt C. Parsons for similar assistance and information. Our Proceedings have also been of great service in locating these places. The list is probably fairly complete, but the data in my possession concerning the south and east shores is exceedingly meagre, and there are doubtless many camp and even village sites yet unmentioned.

WEST NEW BRIGHTON.

1. Village site and burial grounds at Upper or Pelton's Cove, between Livingston and West New Brighton. When the Shore Road was cut through this place many years ago numbers of skeletons, implements, etc., were found. This site is now obliterated.

2. Village site reported at West New

Brighton, now obliterated. Said to have been situated, in part, between Cedar and Dongan streets. When the foundation for the new Parish House of the Church of the Ascension was being dug this Spring, shells, skeletons and implements are said to have been found. A three-pitted hammerstone and a small fragment of pottery were found personally.

MARINERS' HARBOR.

3. Large village site extending from "Blue-Bent Field" to Western avenue, mostly along the shore. Small shell heap on South avenue, opposite the Arlington station. Opened personally in May, 1902. Pottery, flint, horn and bone implements, and grooved axes obtained.

Recent railroad cut made by Milliken Bros., near DeHart's brook, exposed many shell-pits, etc. Pipes, flint, horn and bone implements, and several grooved axes were obtained.

Scattered lodges along Bowman's Point nearly to Peggy's Point.

4. Large village site on Tuinessen's or Old Place Neck. Shell heap near extreme end, from whence came the major portion of a pot showing Iroquoian influence. No horn or bone implements obtained here. Recent relics, such as a brass arrow point, bullets, gun flints, etc., have been found here.

Graves reported on property of Rev. James Kinney some years ago.

BLOOMFIELD (WATCHOGUE.)

5. There is no special large village site in this region, but relics occur more or less abundantly on all of the dunes and sand-hills. A stone plummet (?), grooved axes, Iroquoian pottery, pipes, arrow-points, etc., have been found here. Mr. Isaiah Merrill has a fine collection of objects said to have been collected about here, among which is a steatite bead. An inscribed clay bead in my possession is also said to have been found here.

CHELSEA.

6. Lodges about the Watchogue road, near its junction with Union avenue, grooved axes reported; no pottery. This is really a continuation of No. 5.

LONG NECK (LINOLEUMVILLE.)

7. Scattered lodges and some shells along the north side of the Neck.

8. Scattered lodges on south side of the Neck, opposite Price's Island. Shell heap, with pits, but no relics in them.

NEW SPRINGVILLE.

9. Site at New Springville on Corson's Brook. Shells and graves reported; also iron arrow-head.

GREEN RIDGE.

10. Camp site between Journeay avenue and Annadale road, near Richmond Plank road. Early relics.

11. Small village site on Lake's Meadow Island. Small shell heap. Early relics of Indian origin. This site is mentioned by Thoreau in his letters.

WOODROW.

12. Small village site on Sandy Brook, between Pleasant Plains road and Journeay avenue. Early relics, no shells.

KREISCHERVILLE.

13. Lodges, shells, etc., from Cedar Hill to Winant's Brook. Sites all along shore to Rossville. Early relics.

TOTTENVILLE.

14. Extensive shell mounds near Billopp house. Burial ridge nearby, excavated by Mr. George Pepper for the American Museum of Natural History some years ago. Early and modern relics. Horn and bone implements; traces of fabrics and copper. Shells all over the point, and running northward to Richmond Valley. Grooved axe weighing 15 lbs. found here.

HUGUENOT.

15. Site recorded on Bunker Hill near Arbutus Lake.

16. Small shell heap on the bluff

overlooking the bay, near Seguine's point.

ARROCHAR.

17. Site on Richmond avenue, near Arrochar station. There are probably more sites in this neighborhood, but no others have been reported.

NEW BRIGHTON.

18. Camp site and scattered relics on Harbor Hill golf links, a little above Castleton avenue, and near Richmond Turnpike.

19. Camp sites at Silver Lake; shell pit with pottery. Scattered relics along the Shore road near St. George.

20. Camp site on Harbor Hill near Harbor brook and Lafayette avenue.

21. Camp site near junction of Bard avenue and Clove road at foot of Nannyberry hill, just above Schoenian's pond.

RICHMOND.

22. Large camp site back of Richmond, in a clearing in the woods near Ketchum's mill-pond on Simonson's brook. No shells. Grooved axes and early relics.

OAKWOOD.

23. Shell heap reported on salt meadow near Lake's mill.

TOMPKINSVILLE.

24. Possible battle site on Ward's hill, near Cebra avenue. Many triangular so-called war points found in a small area.

Dr. Arthur Hollick described briefly some of the work of the United States Geological Survey, recently concluded or now under way in this vicinity, and exhibited Folio No. 83 of the Survey publications just issued, with the following memorandum:

RECENT LITERATURE RELATING TO STATEN ISLAND.

Geologic Atlas of the United States; New York City Folio; Paterson, Harlem, Staten Island, and Brooklyn Quadrangles; New York-New Jersey.

F. J. H. Merrill, N. H. Darton, Arthur Hollick, R. D. Salisbury, R. E. Dodge, Bailey Willis, and H. A. Pressey. Folio No. 83 U. S. Geol. Survey, Washington, D. C., 1902; pp. 19; maps 13; figs. 1-12 in text; figs. 13-24 on separate sheets 1 and 2.

This folio is of special interest to those who reside on Staten Island and is indispensable for anyone who may desire a knowledge of the geology, topography or physiography of this vicinity. In the text there are chapters on the "General Geography of the District," by R. E. Dodge and Bailey Willis; "Geology of the District," by Bailey Willis, F. J. H. Merrill, N. H. Darton, Arthur Hollick, and R. D. Salisbury; "Physiographic Features of the District," by Bailey Willis and R. E. Dodge, and "Water Supply of New York City," by H. A. Pressey. The Staten Island serpentine is discussed under igneous rocks, on p. 5; the Triassic shale and trap rock receive brief mention in connection with the general account of the Newark Group in the district; the Cretaceous clays and kaolins of the Island are made the subject of a special subchapter on pp. 10, 11; the Tertiary deposits, represented by the yellow gravel on Todt Hill and in the vicinity of Kreischerville, are mentioned on p. 11, and the terminal moraine is described on p. 13.—Fig. 1 is a small map of the whole area included in the description and larger maps, showing the drainage areas and sub-marine contours; Fig. 12 is a sketch map which shows the direction of glaciation and the limits of the terminal moraine, with its furthest southern extension on Staten Island, and fig. 22 is a view of the morainal hills in the vicinity of Grasmere.

The four quadrangles into which the district is divided are each represented by three maps,—one topographic, one representing the surface geology, and

one indicating the underlying formations. The maps of the Staten Island quadrangle should be in every school on the Island.

Mr. E. C. Delevan submitted the following :

ADDITIONAL INFORMATION CONCERN-
ING COLONEL LOVELACE.

[The following memorandum may be added to my paper, which was published as Special No. 22 of our Proceedings, under the title "Colonel Francis Lovelace and His Plantation on Staten Island."]

It seems to have been assumed that Colonel Francis Lovelace, Governor of the Province of New York, was the son of Sir Richard Lovelace, Baron of Hurley, and was the grandfather of Lord John Lovelace, who died in New York in 1709, (2 Col. Doc. 580, note), until this assumption was questioned by General James Grant Wilson, (2 Mem. Hist. City of N. Y. 94, 96.)

A biographical notice in Hazlitt's edition of the Poetical Works of Sir Richard Lovelace, lends color to General Wilson's theory. Other side lights are thrown upon this shadowy subject by poems and notes included in this collection, which may be found at pages 104, 155, 218, 221, 237, 291 and 293.

The authority of the News Letter of April 12th, 1667, (Col. Fr. Lovelace and His Plantation on Staten Isld., p. 58), is doubtful upon its face. It states that "Colonel Lovelace, brother of Lord Lovelace, is to succeed Colonel Nicholas in the government of New York." But the name of the governor was Nicolls, not Nicholas. If the News Letter writer blundered in stating the name of the governor, may he not have blundered in stating the relationship of the new appointee?

The historical question as to the identity of Governor Francis Lovelace appears to be still open.

SPECIMENS EXHIBITED.

Mr. Wm. T. Davis exhibited the following specimens :

1. Yellow gravel sandstone from Todt Hill, showing concretionary structure, presented by Mr. W. A. Galloway.
2. *Rana virgatipes* Cope, from Lakehurst, N. J., a frog which has not yet been recorded from Staten Island, but which may occur here.
3. *Limnobates lineata*, the "marsh treader," captured on Staten Island in a plowed field some distance from any water.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL VIII No 23

MAY 9th, 1903

The regular monthly meeting of the Association was held at the residence of Mr. Read Benedict, West New Brighton.

In the absence of the President and the Secretary, Mr. Edw. M. Strothers was elected temporary Chairman and Mr. O. M. Curtis, acting Secretary.

The Curator reported that arrangements had been made for the delivery to the Association during the coming week of the mineralogical collection of the late Robert T. Robinson and the collection of birds' nests and eggs belonging to Mr. Beverly W. Robinson.

Mr. Wm. T. Davis, for the Committee on Re-naming of Streets and Highways, stated that in accordance with the resolution passed at the last meeting, a typewritten copy of the report presented at that time, had been sent to Mr. George Cromwell.

Mr. Edw. M. Strothers, for the Committee on Parks, reported that according to the daily press, the bill to preserve the Billopp House site, had passed both branches of the Legislature, and only needed the Governor's signature to become a law.

Mr. Alanson B. Skinner read the following paper:

IROQUOIAN INFLUENCE ON THE STATEN ISLAND INDIANS.

About the time of the Dutch governors of New Amsterdam, the cry of Mohawk

would have caused the greatest consternation if uttered in one of the many little Algonkin villages in the vicinity, and not without good reason, for when a Mohawk war party arrived it was wise for the inhabitants to emigrate.

The people of Aquehonga were not exempt from such visits, for it is well known that the Mohawks conquered all the Indians in this neighborhood. So far as I have been able to find out, however, there is no record of any Iroquois inroads having occurred on Staten Island in historic times, but that they did occur and that the Mohawks did have considerable influence on the Raritanians of Staten Island is unmistakably proved by those imperishable implements of clay and stone, which the red men were fortunately unable to take with them on their journey to the "Happy Hunting Grounds."

A stone arrow head, a net sinker, a hammer stone, is much the same article the world over. Arrow heads from Denmark are nearly indistinguishable from those from Ohio; while an arrow head from Australia may look exactly like one from New York. Thus it is with the stone implements, but with the pottery—there we have the whole story.

Though the Mohawk style of chipping flint was identical with that of the Raritanians, yet their higher scale of civilization rendered the Iroquois pottery beautiful in form and decoration, while

that of the Algonkins though often handsomely marked never reached that perfection in decoration and form, for which the Iroquois pottery was noted, until after they had been subjugated by the people of the Long House.

In Popular Science News for September, 1903, Mr. Percy M. Van Epps in his article 'Aboriginal Remains in the Mohawk Valley,' said: "The peculiar and characteristic notched angle which is clearly shown in the illustration, is to Archæologists a veritable 'hall mark' of Maquas, or Mohawk origin."

Iroquoian pottery is usually characterized by the raised rim, narrowed neck and rounded bottom of the vessels, which frequently are ornamented by rude representations of the human face, a peculiarity which has never been reported, to my knowledge on Algonkin pottery, to the present time. The Algonkin pottery possesses a flat rim, is not bottled necked, and the base of the vessel usually terminates in a point.

The first of my specimens is a fragment of the rim of a typical Algonkin vessel collected on the Milliken site at Mariners' Harbor. It is ornamented with incised lines and dots, and the edge is notched.

The next specimen is a fragment from the same place, this is also a portion of an Algonkin vessel, ornamented with rows of incised lines, which run up over the brim and down on the inside for about an inch and a half. The rim turns outward slightly, but this is not an uncommon feature.

Fragment number three, is also from the same site. It is a portion of a thin, well made, but undecorated vessel.

Specimen number four, like the one preceding is of the Algonkin type. It is a piece of an exceedingly thick, chunky and plain pot. There are faint and indistinct notches running along the edge. It is possible that this may be a fragment of an exceedingly old vessel.

It comes from a site on Western Ave., Mariners' Harbor, and is the largest pottery fragment which I have seen from that place.

Number five, is a portion of a rim of a pot, showing Iroquoian influence. The raised and flaring rim is fairly distinct. It has been ornamented by pressing the edge of a scallop shell in the clay while yet soft. This specimen comes from the Milliken site.

Number six, is a small fragment of an Iroquoian pot rim from Watchogue, which possesses the Mohawk notched angle. It is ornamented by incised lines.

Number seven, is a similar fragment from the same place.

The next specimen is the major portion of a vessel from the shell heap, on Tuinissen's or Old Place Neck. It is a combination of the Algonkin and Iroquoian styles. It has a constricted neck possesses a slightly raised rim and a rounded bottom. It is ornamented by impressing upon the wet clay a stick wrapped around with grass.

The small fragments of pottery from Watchogue, both Iroquoian, possess almost unique features, one is evidently part of a vessel which possessed a raised knob or handle, the other was undoubtedly marked with a pottery stamp, as is clearly shown by the regularity of the decoration.

Last, but not least, is a part of the rim of an Algonkin vessel excavated on the Milliken site, which possesses the unique feature of crude, but easily recognized raised human faces.

I believe that this feature is not only unique in Staten Island specimens, but so far as I can learn, has never been reported from Algonkin territory before.

Mr. Wm. T. Davis exhibited specimens and presented the following:

NOTES ON STATEN ISLAND INSECTS.

Thecla irus Godt. Since the local list

of butterflies was published recording this species from Watchogue, it has been taken on April 24th, in the woods between the Black Horse tavern and Richmond, and also in some numbers near Four Corners.

Papilio ajax Linn. This butterfly was seen June 14th, 1902, at Tottenville, and Mr. Fulda captured two specimens at Concord on Aug. 5th, 1902. The insect has been recorded from the Island, July 5th, 1886 and June 30th, 1889.

Nisoniades martialis Scudd. This is an addition to the local list of butterflies. The specimen shown was collected on the hill west of the Clove Valley near the Cave by Mr. Oscar Fulda, May 3d, 1902. It is not an uncommon insect in the Highlands of New Jersey.

Protoparce rustica Fabr. A specimen of this sphinx moth was captured at electric light near Four Corners, and is now in the collection of Mr. Charles Benedict. It is an addition to the local list published in these Proceedings, Jan. 10th, 1903.

Apithes agitator Uhler. This cricket is common in the South, and has been reported from Burlington and Cape May Counties, New Jersey. The female specimen shown was captured on September 21st, 1902, at Ward's Point, Tottenville. This is the most northern locality so far reported for the species. With this addition the Staten Island list now embraces fifteen species of crickets.

Mr. Davis exhibited as an addition to the local Flora a dried specimen of the Black Swallow-wort (*Cynanchum nigrum* L.) collected at Rossville. He also showed a living ant-lion, found that afternoon at Watchogue, where its pit had been constructed in the soft material collected about the base of a large stump.

At the close of the meeting, Mr. Charles Benedict exhibited his collection which embraces many interesting objects collected on the Island.

PROCEEDINGS

OF THE

NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. VIII, No. 24.

OCTOBER 10th, 1903.

The regular monthly meeting of the Association was held at the residence of Mr. Howard R. Bayne, New Brighton, with the president in the chair.

The following were elected active members:

Brewster Boyd, West New Brighton.
W. L. Rowlands, New Brighton.
A. C. Knothe, New Brighton.
W. A. Suydam, New Brighton.

Mr. Wm. T. Davis read the following paper on

STATEN ISLAND CAVES.

Until recently, the only cave on Staten Island has been the one in the serpentine rock not far from Britton's upper pond and near the reservoir of the Crystal Water Company. Though a pole can be thrust to a considerable distance beneath the rock, yet the more open part is hardly large enough to afford shelter to one person in a rain storm. This cave is not a natural one, but according to local history, it and some other holes on the hillside were dug, shortly after the Revolution, by Housman and his negro servant in their search for gold.

A much larger cave, and one of more recent origin, is to be found on the shore near Huguenot. It is in the drift material of the cliff, which the sea is gradually washing away, and owes its origin to the storms and high tides

that have beaten against the cliff, and its preservation to a nearly horizontal layer of iron-cemented clay and pebbles. This last has been the main support of the roof, while the sea has washed a small hole in the cliff by means of which one may enter a considerable chamber within.

When Mr. Philip Dowell and I measured the cave last June, we found the entrance about twenty-one inches high, by four and a half feet broad. The floor of the cave was covered with sand washed in by the sea. In one direction, it measured about ten feet, and in the other, nine feet, and the roof was four feet from the sandy floor.

The severe summer storms have since enlarged the entrance somewhat; more shells and sand have been washed upon the floor, and the sea will shortly destroy our largest Staten Island cave.

Mr. Davis also read the following necrological notice:

AUGUSTUS RADCLIFFE GROTE.

The daily papers of September 24th announced the death in Germany of Augustus Radcliffe Grote, to whom American entomology is particularly indebted for his studies of the native moths, of which he described several hundred species.

Since 1884 he had resided in Germany, either in Bremen or Hildesheim, and

he died in the latter city on the 12th of September. For two considerable periods, he made his home on Staten Island. His father, who was one of the promoters of the first Staten Island steam railroad, resided on a pleasant country place on Rockland Road, near Egbertville. The place is still attractive with its many fine ornamental trees, its pond and nearby woodland. It was here that Mr. Grote, as a little boy, commenced his entomological studies.

In a letter written in 1886, he says: "I am myself the first Staten Island entomologist so to speak. I made my first collection in 1856, gumming the bluebottle flies on cardboard. I then had not heard of pins or that there was such a thing as a science and literature of insects." Later a kind old German gardener told him about insect pins, some of which were procured.

In the preface to his "Check List of North American Moths", published in May, 1882, Mr. Grote mentioned the time when as a boy he "caught *Cicindelas* on the south beach of Staten Island."

He was for some time director of the Buffalo Academy of Natural Sciences, but upon leaving Buffalo came to Staten Island. This, if I remember correctly, was in 1880. He resided at New Brighton in one of the Jackson cottages, on the retired lane that leads from Franklin Avenue. The surroundings of this cottage were very pleasant, and he had his large collection of moths arranged on two low shelves in one corner of the living room or library. It was here that he received many scientific friends—Prof. C. H. Fernald, Mr. Henry Edwards, and others. When a box of moths was taken to him he would name them at sight, giving the authorities as well as the scientific names.

In this line, he was wonderfully expert and accurate. He used to tell me

what danger his collection was in, as the little cottage was liable to be destroyed by fire and the type specimens lost. Oddly enough, his prediction regarding the cottage came true, but not until he had sold his collection to the British Museum and removed to Germany.

Mr. Grote was not only a lepidopterist of authority but was the author of "Genesis I, II;" "The New Infidelity;" "Rip Van Winkle: A Sun-myth and Other Poems"; "Education and the Succession of Experiences," and four popular science lectures, delivered in the course before the Buffalo Society of Natural Sciences. In spite of "The New Infidelity" he seemed kindly disposed toward the church near his home, and on one occasion made it quite a donation.

In a letter from Germany in 1886, he writes: "I have written a pamphlet on our Hawk Moths, besides a lot of papers for *Canadian Entomologist*, and a lot of music. The bands here play some of my pieces. The Emperor, and the Duke of Coburg, have accepted my dedications."

Dr. Arthur Hollick exhibited a map of Silver Lake, on which the depths and sub-aqueous contours were indicated, and read the following memorandum:

DEPTH AND FORM OF THE SILVER LAKE BASIN.

At the meeting of this Association on September 13th, 1884, a paper was read by Mr. L. P. Gratacap, in which he gave the results obtained from a series of soundings in Silver Lake. The greatest depth noted was 16 feet 6 inches.

Recent investigations, in connection with condemnation proceedings for Silver Lake Park, have included measurements of the depth of the lake, which has been plotted in a series of rectangles, with the figures represent-

ing the depths at regular intervals. By joining the points of equal depth we are able to form quite an accurate idea of the general shape and contour of the basin, as well as to locate the place of greatest depth. This latter is towards the southern or outlet end, where there is a maximum record of 18 feet 6 inches, included within the limited 18 foot contour.

The steepest slope is on the side nearest the Richmond Turnpike, where the pavilion stands. The growth of aquatic and swamp vegetation has encroached considerably on the northern and eastern borders for many years, and recent grading and road building have resulted in silting up and shallowing a considerable area in the same vicinity.

The morainal barrier at the outlet end is quite narrow and steep and a comparatively small cut would result in completely draining the basin.

Dr. Hollick also read the following reviews of

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. *Bulletin No. 32, New York State Museum*, (Feb. 1900), pp. 1-187, with map and 91 figures, is devoted to a report on the "Aboriginal Occupation of New York", by W. M. Beauchamp. In the list of localities where relics have been found there is only the following brief reference to Staten Island on, p. 139.

"Richmond County. A few implements and shell heaps with some graves have been reported near Tottenville at the south end of Staten Island".

It is quite evident that the author was not acquainted with our Proceedings and that he did not seek very hard for information, as there is no reference whatever to the Island in the list of authorities. It is to be hoped that the report may be of more value or interest

to other sections of the State than it is to ours.

II. In the *N. Y. Tribune* of April 19, 1903, almost a whole page is devoted to illustrated accounts of our Poor-House farm and of the park system proposed by the Chamber of Commerce. In connection with the latter is a reduced copy of the map showing the suggested park areas.

III. In the *N. Y. Tribune* of May 24, 1903, in an illustrated article on the Emerson Centennial celebration in New England, is an account of "The Snuggery", the former residence of County Judge William Emerson, on Richmond Road, where he was often visited by his brother, Ralph Waldo Emerson, and by Henry D. Thoreau. Together they gave the name of Concord to the settlement in the vicinity, in memory of the New England city of that name, with which they were so intimately associated.

"The Snuggery" was destroyed by fire in 1855 and Judge Emerson subsequently built the residence now known as the Unger estate. One of the illustrations is a picture of the front of this house.

MINOR NOTES.

Mr. E. C. Delavan presented a glaciated pebble of hard serpentine, obtained from a caisson excavation at Pine and William Streets, New York City.

Mr. A. B. Skinner exhibited fourteen specimens, representing fragments of indian clay pipes, collected at various localities on Staten Island.

The Curator reported upon mycological papers and photographs received from Mr. C. G. Lloyd of Cincinnati, Ohio, and suggested that the following memorandum should be printed in the Proceedings:

"We send you these publications in hopes that we can interest you in picking up and sending to us puff balls

ha t you meet. It is a simple matter both to collect them and to send them. Simply pick them up, dry them thoroughly, wrap them in tissue paper and send enclosed in a box to prevent crushing in the mails. Then mark them as "samples without commercial value" and the postage you will find will be very slight, only nominal. We are particularly anxious to get a knowledge of the puff balls of your country and

hope that you will co-operate with us in supplying us with material from which we can work. If you will collect the "puff balls" we will undertake to see that they are described, published and illustrated in a satisfactory manner, and that due credit be given you.

C. G. LLOYD,

224 W. Court St.

Cincinnati, Ohio, U. S. A."

Supplement to

Staten Island Names

Ye Olde Names and Nicknames

By WILLIAM T. DAVIS

PUBLISHED BY THE
Natural Science Association
NEW BRIGHTON, STATEN ISLAND, N. Y.

PRICE FIFTY CENTS

1903

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PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND

VOL. VIII. NO. 25. (Special No. 23) OCTOBER 1903

SUPPLEMENT TO
STATEN ISLAND NAMES, YE OLDE NAMES AND NICKNAMES
By WILLIAM T. DAVIS

As part of its Proceedings for March 14th, 1896, the Natural Science Association published a pamphlet on Staten Island names. This was received with some favor by the public, and was incorporated in Vol. 1 of Mr. Morris' Memorial History of Staten Island. Since 1896 many old newspapers have been examined, and the records at Richmond have been more carefully gone over. Several residents * have also taken an interest in the subject and have communicated additional information, and from these, and various other sources sufficient material has been accumulated to warrant the publication of a supplement to the original pamphlet. To that pamphlet and the accompanying map, drawn by Mr. Charles W. Leng, we refer the reader for information and the further elucidation of facts mentioned in the present supplement.

As an illustration of how names change, even in a few years, we give the following list of residences of "Men drafted from Richmond County." It appeared in the *Richmond County Gazette*, March 1st, 1865, and no doubt at that time Bay View, Inside Shore and the other places mentioned were well known localities.

Braisted, Elias N.; Watchoak
Braisted, Cornelius; Watchoak
Bonner, John; Bay View
Cahill, Pat; Bay View
Carroll, Daniel; Bay View
Caron, Mark; Van Vleck's.
Carmany, Pat; Petticoat Lane
Ellis, J. M.; Inside Shore
Gagagan, Mathew; Rocky Hollow
Grant, Alexander; Sandy Road
Sampson, Thomas; Rose Hill
Totten, James, Jr.; Mildam Road
Woglom, John; Inside Shore

Present Name.

Watchogue or Bloomfield.
Watchogue or Bloomfield.
Clifton.
Clifton.
Clifton.

Rockland Avenue.
Kreischerville and vicinity.
Richmond rd at foot of Grymes Hill.
Van Pelt Ave., Mariners' Harbor.
Manor road near Egbertville road.
Richmond Valley, near Wier's Mill.
Kreischerville and vicinity.

* I wish to particularly acknowledge the assistance of Mr. Frank W. Jo-line of Tottenville.

KILLS, CREEKS AND BROOKS.

The Chum. Logan's Spring or Harbor Brook. The late Mr. Geo. W. Wright, of West New Brighton, contributed the following: "The brook you call the Harbor Brook passes through the premises of the late Geo. Wm. Curtis and was by his guest, Mr. Nathaniel Hawthorne, years since, named 'The Chum.' I think this name antedates yours. I think Mr. Hawthorne found in his rambles that his brook and the one through Mr. Goodhue's united before running into the Kills, and as they both passed through the same channel to the Kills suggested the term 'Chum.' Mr. Curtis is my authority for the name. The statement above suggesting the name is simply my fancy."

Soria Brook. An old name for the brook that flows through the grounds of the Sailor's Snug Harbor. See Proceedings Nat. Science Assn., Vol. VII p. 55.

Thompson's Creek. The second small creek southwest of Old Place Creek. Though comparatively broad at its mouth it only extends a short distance into the meadow.

Oyster Creek. " . . . with ten acres of salt meadow lying at Karles Neck in the County and province above st to the southward of a certain creek commonly called and known by the name of the Oyster Creek." 1721 Liber C.p. 152.

Van Cleft Creek. "A certain tract of salt meadow in the town of Westfield, beginning at a stake on the bend of a certain creek known by the name of Van Cleft Creek, on the north side of said creek, and running from thence north 65 degrees and 30 minutes east 11 chain and 26 links along a range of stakes to the line of the land of Jesse Morgan . . . thence along said river [S. I. Sound] and Great Fresh Kill Creek to said creek known by the name of Van Cleft Creek, including an island of salt meadows known by the name of Van Cleft Island, thence along said creek called Van Cleft Creek to the southermost side thereof . . . till opposite the place of beginning. From thence crossing said creek to the place of beginning. Being bounded on the north by the said creek and meadows of the said John Journeay, on the east by land of Jesse Morgan, on the south by meadows of Charles Morgan and Winant Winant and on the west by said river and Great Fresh Kill Creek." *Richmond County Gazette*, May 10th, 1865.

Shell-heap Creek. "All that certain piece or parcel of land situate lying and being in the town of Northfield, County of Richmond and State of New York on the northerly side of the Turnpike road from the Bull's Head to the Blazing Star ferry, bounded as follows, to wit: On the northwest by the land of William Pettit, on the southeasterly by the said Turnpike Road, on the southwest by land of Elias Decker and on the west by Shell-heap Creek and Staten Island Sound . . . " 1873. Deeds, Liber 103, p. 57.

Carle's Neck Run. " . . . bounded on the east by the Great Swamp; to the north by the land of Edward Jones, formerly John West's, and west by the land of John Crocheron, and south by Carle's Neck Run, and the land of Isaac and Bart Simonson." 1785. Liber E. p. 355.

Johnson's, Mills' or Benedict's Creek. Names for what is now generally called Benedict's Creek, near Rossville.

Perny Creek. "Beginning at Lacounts Creek and on the west side of the mouth of Perny Creek, and running along said Perny Creek northeasterly to another little creek branching from said Perny Creek, from thence along said little creek by the line of Henry Slaughter's land crossing to Lacounts Creek, from thence along said Lacounts Creek to the place of beginning." Description of 1810. Deeds, Liber 187, p. 384.

Lacount's Creek. " . . . near the old Blazing Star in the town of Westfield . . . also a piece of salt meadow situate in the place aforesaid, beginning at the middle of an old bridge formerly across Lacount's Creek . . . " 1791, Liber E, p. 442.

"Beginning at Lacount's Creek and on the west side of the mouth of Perny Creek . . . " Description of 1810. Deeds, Liber 187, p. 384.

Kingsbury's Brook. An old name for Uncle Ed. Wood's Brook, Tottenville.

Paul Gurne's Creek; Hanchemas Brook. "Beginning at a stake standing in the meadow by the creek called Paul Gurne's Creek thence along the said creek to a place commonly called Hanchemas Brook thence up the said brook to the land of Abraham Mannet. . . . to Sandy Brook." 1725, Liber C, p. 205.

"Running west from the creek commonly called Paul Gurney's Creek one hundred and thirty rodd to the highway of Capt. Christopher Billopp. . . . " Liber C, p. 324, 1727; also 1721, Liber C, p. 329; 1735, Liber D, p. 83; 1749, Liber D, p. 471.

Devil's Elbow. "All that certain piece of salt meadow lying and being in said Westfield on the west bank of Lemon Creek so called, bounded and described as follows, to wit:

"Beginning at a stake sixty feet from the bend of said creek below the "Devil's Elbow" so called . . . " 1878, Deeds, Liber 141, p. 112.

ISLANDS AND MEADOW ISLANDS.

Great Meadow Island or Great Island of Mark Disosway. " . . . piece or parcel of meadow at Staten Island in the County of Richmond, aforesaid at a place called the Great Island of Mark Disosway . . . " 1728, Liber D, p. 42.

"All that certain lot of salt meadow, known by the name of Du Bois' Meadow, situate on the northwest side of Staten Island in the County of Richmond being on the southeast part of a tract of meadow commonly called the Great Meadow Island . . . Bounded on the west by the meadow of the said Nathaniel Johnson, on the north and northwest part by the meadow of the said Abraham Monee, and part by Mark's Creek, on the east and southeast by another creek, which meets or runs into Mark's Creek, and on the south by the sound. . . . " 1792, Liber E, p. 348; also 1792, Liber E, p. 349. Mark Disosway's Creek is the one now known as Mark's Creek, Wat-chogue.

Little Island. "All that certain lot piece or parcel of salt meadow land situate lying and being in the town of Northfield in the County and State aforesaid, and commonly known by the name or designation of 'Little Island' formerly the property of Asbury Crocheron, deceased, and is bounded

westerly by the Fresh Kill Creek leading to Carl's Neck, southerly and easterly by Peter's Creek so called, and northerly by a creek or ditch on the line of meadow of David Latourette and contains about four acres of land be the same, more or less." Description of 1855. Deeds, Liber 207, p. 279.

Ridgway's Island. "Also one lot or parcel of salt meadow formerly belonging to Joseph Decker, situate on the east side of the neck, bounded . . . southeasterly by a small ditch that separates it from meadows called Ridgway's Island." 1886. Deeds, Liber 187, p. 500.

Peteets Island. " . . . a small island of salt meadow or marsh on ye north side of a creek called ye Fresh Kill, containing three acres. Beginning at ye mouth of a small creek lying east by north from an island of upland formerly called Peteets Island. 1722, Liber C. p. 100.

Van Cleft Island. At Great Fresh Kill and Staten Island Sound. See Van Cleft Creek.

REEFS, ROCKS, SHOALS, ETC.

Mill Reef. "A beacon on the Mill Reef, opposite New Brighton, is very necessary, if we may judge from the fact that almost every day vessels are seen there fast upon the rocks. Coal boats, of which a great number go up the river laden from Elizabethport, are frequently detained a long time and seriously injured, there being nothing whatever to warn them of their danger." *Richmond County Gazette*, March 14, 1860.

Flat Rock. "Also a certain parcel of meadow lying on the north side of the Fresh Kills near the mouth thereof beginning near the Flat Rock. . . being bonded by the west to the Sound on the north on the meadows not layed out and on the east and south by the small creek aforesaid and the Fresh Kill containing sixteen acres and two rods, there being five acres allowed for creeks, ponds and marshes as by the said patent. . . ." 1708, Liber D, p. 112.

Great Rock. " . . . on the south side of the Fresh Kills beginning at a great rock near a gom tree that is marked on the south side on the King road running from thence upon a direct line to an old white oak stump and chestnut stump standing together with a stone planted by the stumps and from thence running east to the line of Francis Orselston and from thence running upon a direct line north to the Ready Meadow and from thence west to a marked stump with a stone by the stump and from thence to the tree where it began always excepted out of the same the Kings road and one acre of ground granted by the said John Belleville to the French Congregacon." 1735, Liber D, p. 141.

The Big Rock. Half way down the "Gully" is the largest exposed rock in Tottenville.

Yates' Hole. A deep hole in Fresh Kills just above Lake's Meadow Island.

HILLS.

Hamilton Hill. Crossed by the present Prospect Avenue, New Brighton. "On Wednesday morning last the barn of Mrs. S. T. Jones, in Hamilton Hill, back of New Brighton, was destroyed by fire." *Richmond County Gazette*, October 18th, 1865.

Retreat Hill. The hill in front of the Seamans' Retreat, Stapleton, over which the shore road passes. Portions of the hill were removed during 1861, 1862 and later. Mentioned in the *Richmond County Gazette*, May 7th, 1862, April 1st, 1863 and July 31st, 1872.

Brimstone Hill. On the westerly side of the Richmond road near the head of Vanderbilt avenue. Recorded in Libers A, p. 247 and 11, p. 563 of Lispendens, at Richmond, in connection with the lands of John Wandel, Abraham Blake and Richard O. Cary.

Ferguson's Hill. A part of Fox Hill crossed by Belair road and Tompkins avenue, Clifton.

Strawberry Hill. A name given by Judge Emerson and his neighbors to an open space where strawberries grew on the slope of Ocean Terrace near the Douglass road.

Susan's Bluff. The eminence on the southerly side of the Clove, formerly owned by Judge Wm. Emerson, who called it Susan's Bluff in honor of his wife. Judge Emerson was a brother of Ralph Waldo Emerson and lived on the slope of the bluff toward the Richmond road, where Thoreau visited him in the "Snuggery" during the summer of 1843. Susan Haven is described as the wife of Wm. Emerson in the *Sepoy* of Nov. 5th, 1859.

Castleton Hill. ". . . northeast side of the highway leading from the Moravian Church to the Richmond Turnpike, over Castleton Hill, commonly called Toad Hill . . ." *Richmond County Gazette*, May 31, 1871.

Buck's Hill. ". . . to the lots at Karle's Neck, and from thence bounded by the rears of said Karle's Neck lots, as they severally bear to the place where it first began, abutting and bounded upon the road or highway towards the north, and upon lands held by the said John Beathy on Buck's Hill formerly possessed by Samuel Oliver, and land now in the tenure or occupation of Richard Conner towards the east, and upon the land held by the said John Hillyer as aforesaid towards the southeast and upon land belonging to the said Matthias Sweem, formerly Hubbards, towards the south and upon the said rears of the Karle's Neck lots aforesaid towards the west and containing . . . about one hundred acres." Liber D, p. 299, 1757. (See Mills Dale or Buck's Hollow).

Big Hill; Richmond or Latourette's Hill. ". . . Road leading from the neck down the Big Hill (so called) to Richmond. . . ." 1799, Liber E, p. 435.

Latourette's Hill is mentioned in *Richmond Co. Gazette*, Dec. 10, 1862.

Nigger Hill. At Giffords on the westerly side of Canavello's Lane near the Amboy Road.

Weir's Hill. "Change in Election District. . . . along the Amboy Road to Weir's Hill, up Weir's Hill to Sharrott's Corner, and thence westerly down to Kilmeyer's store, and thence down the lane to the river by Henry Sleight's." *Richmond County Gazette*, October 19th, 1864. (See Sharrott's Corner).

Cherry Hill. At the foot of Sleight Street, Tottenville.

Albert's Bluff. Near the Billopp house, Tottenville.

Katie's Knoll. About two hundred feet west of South Avenue, Mariners' Harbor and on the south side of the railroad track. Named after Katie Van

Pelt. Much of this knoll was used to partly fill in the adjacent swamps by the King Drop Forge Company in 1896.

VALLEYS AND HOLLOWES.

The Gully. A ravine running westerly through Biddle's Grove, Tottenville, to the shore of the Staten Island Sound.

Christopher's Gully. In the valley of Uncle Ed. Wood's Brook, near the Cove, Tottenville.

SPRINGS, PONDS AND SWAMPS.

Aunt Suckey Baker's Spring. The little stream that once flowed from this spring crosses the Todt Hill Road and unites with the Moravian Brook. Many years ago the spring was enlarged, walled up and changed into a well, but in old time its water was considered to have curative power. Aunt Suckey Baker's maiden name is said to have been Jose' and Old Jose' once owned this mineral spring on the "Iron Hill."

Aunt Nellie's Spring. Named after Aunt Nellie Storer and situated on the shore near Kreischerville. This spring is covered by very high tides.

Iron Spring. "He said he lived between the Iron Spring and 'Skunk's Misery' and had walked five miles to take a look" (at the locomotive). *Richmond County Gazette*, March 28th, 1860.

Winant's or Rossville Spring. On the southerly side of the Fresh Kill Road in Rossville village. It is really an overflow from a well situated a few hundred feet up the hill.

Boiling Spring. In a brook near the Pines, Tottenville. Also a second "Boiling Spring" on the flats at Uncle Nat Dubois', north of Mill Creek on the Sound. This spring is submerged when the tide is half flood to half ebb.

Hessian Spring Mill-pond. Formerly occupied a portion of the valley between the present Jersey Street and Westervelt Avenue, New Brighton. The following is from the *Mirror* of February 3d, 1838: "On Thursday last five or six men were engaged in cutting ice for the New Brighton Association on the mill-pond just behind the Hessian Spring, at this place, the ice gave way and they were precipitated into the water. All were rescued but one, Mr. William Ford, who was drowned. We learn that the members of the Association, with a promptness highly praiseworthy, have resolved to subscribe a fund amply sufficient to keep the family of the deceased well provided for during the winter." (See "Hessian Spring.")

Great Pond. Probably Silver Lake. "And also a certain pond commonly called the Great Pond, bounded by the lands of Wilhelmus Freeland and others, and reserved in the grant of Thomas and Walter Dongan for the lands surrounding the said pond, and also a copper and iron mine in the lands now possessed by Walter Dongan, likewise reserved in the grant of the said Thomas, in as full and ample a manner as in the said grants they were reserved." 1794. Liber E. p. 343.

Great Pond. Appears to be the wide part of Great Kill near where the old Lake mill stood. ". . . lot of meadow at the Great Kill containing ten acres and ten acres of swampy Reedy meadow by the Great Pond . . ." 1714. Liber C. p. 44.

" . . . beginning by the water side sixty Rodd to the west of the Great Pond, and stretching into the woods northwest twenty-five degrees . . .
 . " 1722. Liber C. p. 128.

" Together with one lott of salt meadow at the Great Kills containing eight acres and eight acres of ready swampy meadow adjoining unto the meadow of Daniel Stilwell by the Beach to the Great Pond . . . " 1776. Liber E. p. 84.

Dissosway's Mill Pond. Mentioned in 1774, Liber E. p. 57, and probably the pond known in 1859 and later as Weir's Mill Pond, at Mill Creek, Tottenville. (See Le Conte's Corner).

Bogardus Pond. On the westerly side of the Rossville Road, near Sharrott Road.

Negro Pond. In the woods north of Sharrott Road. It is the pond of Little Africa and is near the Kaolin Pit Road.

Blue Factory Pond. A name for the artificial pond at the Ultramarine Works, Rossville.

Bay View Pond. " A skating pond called Bay View Pond has been opened outside of the village of Tottenville, under the direction of Mr. Christopher. It faces Princes Bay and is well prepared for the enjoyment of those who may frequent it. Four ice boats and a refreshment room add to the attractions." *Richmond County Gazette*, Jan. 3d, 1866.

Garretson's Pond. At Garretson's Lane between Aspinwall Avenue and Sleight Street, Tottenville.

Biddle's Pond. At Biddle's Grove, Tottenville.

Pinefield Pond. In the "Pines" near the railroad track, Tottenville.

Storer's Pond. On Abram Storer's farm and near Storer's Lane, Tottenville. Used by Staten Island Rapid Transit Railroad for water supply.

Dongan's Mill Ponds. Col. Dongan had two mills, an upper and lower. 1759, Liber D. p. 326. 1764, Liber D. p. 514. 1774, Liber E. p. 59. 1792, Liber E. p. 248. Apparently Dongan's Upper Pond was known later as Blake's or Brook's Pond, and the lower as Bodine's Pond.

Quarry Ponds. At the Upper Quarry, near Graniteville. Small rain water ponds in depressions where the rock has been blasted.

Sleighter's Pond. Close to the easterly side of the north end of the Big Hummock at Watchogue.

Snake Pond. Opposite to where the Watchogue Road is joined by the road that leads to the Big Hummock—on the north side of the Big Hummock Road.

Logger-head Pond. Close to the south end of the Big Hummock at Watchogue. This name may have been applied to the pond from the snapping turtles that occur in it; the true marine Logger-head turtle probably never entered the pond, though it borders on the salt meadows.

Round Pond. A small circular depression about thirty feet in diameter in the woods on the edge of Old Place Meadow, south of Snake Pond. Dry in summer. Snake or Dead Man's Pond has lately been drained.

Blacksnake Pond. Near Aspinwall Avenue, Tottenville. Filled in several years ago.

Willow Swamp. The Amboy Road crosses Willow Swamp at Sandy Brook.

The "Quarantine Road near the Willow Swamp bridge," which crosses Sandy Brook, is mentioned in the *Richmond County Gazette*, Feby. 19th, 1862.

Cranberry Bogs. Natural bogs containing cranberry vines at Sleight Street and Sprague Avenue, Tottenville.

Uncle Aaron Van Name's Swamp. At Sprague Avenue, Tottenville.

MEADOWS, FIELDS AND PLAINS.

The Meadows. Foot of Aspinwall Avenue, Tottenville. Also called Bay View Skating Park early in the sixties, and for more than twenty years the principal place for ice sports.

Rotten Meadows. On the Old Place Meadows between Sedge Pond Creek and Vroom Creek. There are also Rotten Meadows on the New Jersey shore nearly opposite Dongan Island.

Tan-fat Field. A tannery once stood in the field near the upper part of Burgher Avenue, West New Brighton, and the place was in consequence known as the Tan-vat Field. After a time, when the tannery was gone, the careless small boy corrupted the name into the "Tan-fat Field."

PART II

FERRIES AND LANDINGS.

Bedell's Ferry. Apparently Situated at the Narrows. " . . . bounded southeasterly by said first-mentioned road [Old Town Road], southwesterly in part by said road and in part by land now or formerly of Leonard Parkinson, northerly by the road leading to Bedell's Ferry, and northeasterly in part by land now or formerly of said Vanderbilt, and in part by other land of the said Samuel R. Smith, formerly of Rebecca Vreeland . . . " *Richmond County Gazette*, Nov. 23, 1859. "All that certain lot . . . of woodland . . . in the town of Southfield . . . on the northerly side of the road leading from the village of Richmond to the landing formerly known as Bedell's Ferry in the town of Southfield." *Richmond County Gazette*, Dec. 12th, 1866.

Decker's Ferry. "R'd to Decker's Ferry" is shown on John Hill's map of 1780. The ferry must have been situated near the end of the present Shore Road at Mariners' Harbor. Decker certainly had another ferry at what is now Port Richmond. "A ferry was established across the Kill Van Kull from Staten Island to Bergen Point in 1764. It was at the present site of Port Richmond. In 1777 it was known as Decker's Ferry; afterward it was called Ryer's and still later Mersereau's." Bayles, p. 684. Decker's Ferry is shown to the east of the Dutch Church on the old Church Road (Richmond Avenue), on Bew's map, 1781.

Old Point Ferry. At Holland Hook. "Also that tract of land and meadow in Northfield aforesaid lying along the road leading from the Old Point Ferry to Port Richmond Ferry, fronting Newark Bay." *Richmond County Sentinel*, Aug. 24th, 1878.

ROADS AND LANES.

Ocean Avenue. Now Cebra Avenue. "Cebra or Ocean Avenue." Beers, 1874.

Shore Road. Occupied about the same ground as the later constructed Boulevard at South Beach and shown on "Map of an estate at Old Town in the town of Southfield, County of Richmond, Staten Island, belonging to the late Stephen Keteltas, Sen'r, 1846. (See Shore Trail).

Old Sand Road. Now Fingerboard Road.

Summit Avenue. Same as Todt Hill Road.

New Road. Amboy Road. "Bounded northerly by the land of Ephraim Van Gelder, westerly by the land of Daniel Stillwell and southerly by the New Road or Amboy Road." 1762, Liber D. p. 497. New Road also mentioned 1789, Liber E., pp. 140 and 150; 1791 Liber E., p. 199.

Johnson's Lane. Leads from the Amboy Road between New Dorp and Tysen's Lane to the Old Mill Road. Shown on Walling's map, 1859, and on Drripp's map, 1872.

Latourette's Lane. Leads from the Forrest-Hill Road, or that port of it once called Mill Lane, to the road that leads over the Fresh Kills bridge.

Mill Lane. That part of the Willowbrook or Forrest-Hill Road leading from Poverty Lane to the old Ketchum Mill. An old name, but still occasionally used.

Rose Hill Avenue. That portion of the Manor Road from Bradley's Road to the Egbertville or Saw Mill Road, is occasionally called Rose Hill Avenue (Rosewood Avenue, Higginson, 1860) and also the Poor House Road.

Seaman's Lane. An old name for at least that portion of Seaside Avenue laid out by Henry I. Seaman and commencing at the Fresh Kills Road.

Perkin's Lane. Leads from the Amboy Road at Annadale to the shore. Shown by Walling, 1859, and Dripps, 1872.

Seguine's Lane. Leads from the Amboy Road at Annadale to the shore. Shown by Walling, 1859, and Dripps, 1872.

Britton's Lane. Leads from the Amboy Road near Annadale to the shore. Now Harrison Avenue.

Marshall Lane. "Also one other road in the said quarter or west precinct known by the name of Marshall Lane. Beginning by the meadow side at Cedar Bush and running from thence as the road now runs between the land of John Marshall, deceased, and the land of the widow Parlee until it comes to the rear of the Smoaking Point Lotts so called, or to the highway laid out at the rear of said Lotts and from thence as said road runs between the land of Anthony Stoutenburgh and John Mersereau, John Simonson and others till it comes to the main road that leads to Billopp's Ferry, said road to be opened two roads on the west side." 1774. Liber E. p. 58.

"Bounded westerly by the road called Marshels Lane . . ." 1784, Liber E. p. 449.

Mill Dam Road. Now East Broadway, which leads across Mill Creek, at Tottenville. "All that certain lot of land . . . on the northerly side of a new road or avenue called William Street leading from the Amboy road to the Mill Dam Road, so called, and within one-half mile from Totten's Dock." *Richmond County Gazette*, Jan. 2d, 1867.

Middletown Road. Now Washington Street and East Broadway, Tottenville.

Totten Road. Now Main Street, Tottenville. "Main or Totten Street," Beers, 1874.

Biddle's Road. Led from Amboy Road towards Ward's Point through property of Henry Biddle.

Garretson's Lane. Ran from Amboy Road along easterly line of Garret Garretson's farm to the Meadows, Tottenville.

Storer's Lane. Widened and lengthened into Fisher Avenue, Tottenville.

Uncle Nicky Corson's Lane. Now Brehant Street, Tottenville. "All that certain lot, piece or parcel of land situate, lying and being in the Town of Westfield, aforesaid being a part of the land of which Isaac P. Sprague, died seized, bounded and described as follows: Beginning on the northwest corner of said lands at the intersection of the southerly line of Amboy Road and the easterly line of a Two Rod road sometimes called Brehant Lane and running thence easterly along the said southerly line one hundred feet to land now of William E. Joline, thence . . . to land of Jacob A. Cole . . ." 1886. Deeds, Liber 170, p. 343.

Uncle Ben Joline's Lane. Ran through his farm at Tottenville, from "Uncle" Nicky Corson's Lane to Raritan Bay.

Uncle Jake Manee's Lane. Ran through his farm at Tottenville, from Uncle Nicky Corson's Lane to Raritan Bay.

Old Eliza's Lane. Ran through her farm at Tottenville, from Uncle Nicky Corson's Lane to Raritan Bay.

Mills Road. " . . . along the road commonly known as the 'Mills Road' to the public road leading to Rossville." Description of 1810. Deeds, Liber 187, p. 384. Probably named after John Mills, whose meadow adjoined the land described.

Mecklenburg Road. A nickname for Sharrott Road, which leads from the Rossville Road near Bogardus Corners into Kreischerville village.

Kaolin Pit Road. An old wood-road that leads from Bogardus Corners to the Fresh Kills Road, near Kreischerville.

River Road. "For Sale. The estate occupied by Mr. James Parker, situated in Castleton, Staten Island, on the River Road, between Sailors' Snug Harbor and Factoryville . . ." *Richmond County Gazette*, July 8th, 1863. (See Shore Trail). "River Kill Van Kull" is mentioned as early as 1786. Liber E. p. 202. (See Het Kill van Het Cull).

Fish Lane. "Also lot of land assessed to Mary J. Cullen, situate lying and being in said village [New Brighton], bounded and described as follows, to wit: Commencing at a point on the southerly side of the Richmond Terrace, distant 50 feet from the westerly side of Fish Lane . . ." *Richmond County Sentinel*, March 23, 1878.

Tompkins Avenue. Grove Street. Names for part of the present Castleton Avenue, West New Brighton. "All that certain parcel of land . . . on the southwest corner formed by the intersection of State Street and Castleton Avenue (formerly Grove Street) . . ." Liber 130, Deeds p. 232. "All that certain lot of land situated . . . on the north side of Tompkins Avenue (sometimes called Grove Street) . . ." Liber 138. Mortgages p. 153. "The hill opposite Mr. Sexton's, on Tompkins Avenue, near Factoryville, is being cut down by the corporation of the village of New Brighton, and the soil removed to places near the shore." *Richmond County Gazette*, Sept. 1st, 1869.

Mersereau Street. Now Broadway, Port Richmond. "All those . . . lots at Port Richmond . . . on Mersereau Street (now Broadway)." Liber 194. Deeds, p. 566.

Divison Avenue, Church Road, Mechanics' Avenue, Etc. "Portrichmond. The Board of Trustees have resolved to make the following changes in names of streets: Division Avenue to Jewett Avenue; Simonson Avenue (down shore) to Simonson Place; First Avenue to Grace Church Place; Heberton Street to Heberton Avenue; Church Road to Richmond Avenue; Phebe Street to James Street; Mechanics' Avenue to Lafayette Avenue; Steamboat or Ferry Street to Ferry Street. It was also resolved that signs with the names of street thereon should be placed at the street corners." *Richmond County Gazette*, Sept. 2d, 1878.

Smith Street. Now Cottage Place, Port Richmond.

Lydia Street. Now Bond Street, Port Richmond.

Quarry Road. Now John Street, which leads to the Bennett Trap-rock Quarry on the Morning Star Road, Mariners' Harbor.

Mariners' Harbor Road. Now Summerfield Avenue.

Drift Way. "North Side of Staten Island in Richmond County in the Province of New York bounded Northerly by Kill Van Cull, Easterly partly by a Messaige and piece of Land now belonging to Anthony White partly by Land belonging to Ann Groesbeck partly by a Certain Tract of Land purchased by Anthony W. Waters in his life Time of Samuel Ten Eick hereinafter Mentioned and Described and partly by Land late belonging to Abraham Barchalon deceased Southerly by the Wood Land of Jacob Corson and Westerly by the Highway as the Same now runs which said Highway was formerly Called the Drift Way." 1775, Liber E. p. 71. "Highway formerly called the Drift," is mentioned in connection with the Soldiers' Lots in the same indenture.

LOCALITIES, SETTLEMENTS AND VILLAGES.

Precincts or Divisions. "The following Road or Highway was Entered on Record the 15th day of October in the year of our Lord one thousand seven hundred and seventy-three.

"The following Road appears to be layed out in the North Division of the County of Richmond, the 20th Day of September, 1773, Richmond County, S. S. John Batey of the South Division, Abraham Cole of the West Division, Bornt Simonson and Richard Lawrence of the North Division, Daniel Corsen of the Manour, Commissioners appointed for laying out and Regulating of Roads and Highways Do lay a Road in manner and from following: Beginning at the Northeast Corner of Christian Corsen's fence now in possession of Abraham Spier, Running from thence with a direct line to the south past Corner of John Taylor and thence with the same Direct Line to the Land of Samuel Dehart, from thence northerly by the Line of the said Dehart Two Rods and from thence to Reverse the first given Line at Two rods Distance at the North side to the place of Beginning.

"To the County Clerk, we the under Written Commissioners Desire of you to Enter this return upon Record.

John Batey,
Abraham Cole,
Bornt Simonson,
Daniel Corsen.

"Entered this day abovesaid By Paul Micheau, Clk." Liber E. p. 55.

"South Precinct." 1773, Liber E., p. 51.

"North Precinct." 1776, Liber E., p. 87.

These Precincts or Divisions correspond to what was later known as Westfield, Northfield, Southfield and Castleton.

Sagoddiochguisatt. "Certain Tract or Parcell of Land Lying and being at Sagoddiochguisatt, which by deed of gift has been granted unto the said John Mangilson by the Maquase Indians in the year 1681-2 the said Land Running from the marked tree whereon ye name of the sd John Mangilson Stands and also the mark of the Maquase Indians unto the Creek that Lyeth

Westward the line of the sd Land Running into the woods direct North upon a straight Line, Together with all houses, Barnes, stables, orchards, fencings, Feedings . . . " Dated Feby. 10th, 1698-9. Liber B. p. 322.

Johannes Megapolensis, Jun. Account of Maquaas or Mohawk Indians.

The Mengwe or Iroquois Indians. Morris' History of Staten Island, Vol. I. p. 13.

South Side Lotts. "Bounded on the west by the said Abraham Winant, on the north by Joshua Merscreau and James Seguin, on the east by Dowa Johnson and on the south by the Rear of the South Side Lotts." 1772. Liber E. p. 42.

Tosamoca Lot. "Beginning at the southwest part of the south precinct at a place called Tosamoca Lot, all the beach not granted before the lot of the Patent that the said Smith claims his Right by with the small Island called Oyster Island so running along and including the beach to the Land now in possession of Captain Ward joining the North Precinct . . . " 1771, Liber E. p. 188.

Sign of the Ship. "Also a certain piece or parcel of Woodland lying near the Sign of the Ship in the Township of Westfield in the county aforesaid on the North Side of the Road that leads from the Sign of the Ship to the Fresh Kills." 1789, Liber E. p. 299.

"A place called 'The Sign of the Ship.'" *Staten Islander*, May 2d, 1896.

This tavern is said by Mr. John H. Garretson, of Green Ridge, to have been situated on the Amboy Road, nearly opposite to Fox Avenue, at Huguenot. The proprietors name was Halle.

Bloomingdale. Said to be an old name for the valley at Pleasant Plains through which Sandy Brook flows. (See Bloomingdale Road).

Billopp's Lots at Prince's Bay. "Whereas the said Thomas Billopp in and by his last will and Testament among other things have Divised and Bequeathed unto his Daughter, the said Mary Davis, by her then name of Mary Farmer a Certain Tract of Land Lying and being on the South side of Staten Island in the provence of New York in Richmond County Called Lott No. 7 or by such or the like kind of name at or near a Certain place there Called Princes Bay Bounded with sea . . . unto the said William Davis and Mary, his wife, and their heirs and assigns All that the said Tract of Land and Premises hereinbefore and hereinafter more particularly mentioned that is to say Lott Number 1 called Huckles Berry Lott No. 2 called Two Dogwoods Lott No. 3 called Blackoak sap Lott No. 4 called Sassafrace Lott No. 5 called Birch sap Lott No. 6 called Blake and Lott No. 7 called (no name given) . . . " 1765. Liber E., p. 24.

Outside and Inside. Among the fishermen and others at Tottenville the shore and adjacent property along Raritan Bay from The Meadows to what is now the foot of Beach Street is often called "Outside," while "Inside" is that portion along the shore of the Sound from Biddle's Dock to the Mill Creek. All of that part of the village north of the Amboy Road is sometimes included in the latter term.

The Old Elm. Stands at the edge of the Bluff, Tottenville.

The Elm Tree. Near Mt. Hermon Presbyterian Chapel, afterwards Mt. Hermon Institute, Tottenville.

LeConte's Corner. " . . . to continue as said road runs to the place commonly called LeContes Corner, from thence as said road runs turning to the Left hand and so round the head of Dissosaway's Mill pond to the main road that leads to Billopp's ferry." 1774. Liber E. p. 57.

LeConte's Corner seems to have been at the present Kreischerville.

Sharrott's Corner. " . . . on the southerly side of the public road leading from Kilmeyer's Hotel to Sharrott's Corner, and known as the New Road, about two miles from Rossville." *Richmond County Gazette*, September 24th, 1862. See Weir's Hill.

Back Settlements or Wood Lotts. " . . . being in the aforesaid county of Richmond near Smoaking Point, Bounded west by Peter Woglum, East by John Woglum and North by the River Containing sixty-one acres Including two roads one from Smoaking Point to Billop's ferry the other from the Last Mentioned road up to the Back Settlements or Wood Lotts (so called) as they are severally laid out and Entered on Record. 1763, Liber D. p. 594.

Point Lot. " . . . The third is a Lott, known by the name of the Point Lott, near the Lott aforesaid at fresh Kill . . ." 1796, Liber E. p. 397. Also mentioned Liber E. p. 431. Mr. John H. Garretson thinks this to be the land projecting into Bedell's Mill Pond at Fresh Kills or Green Ridge.

Ferry Stairs. At Holland Hook. "Bounded on the north by the Causway leading to the Ferry Stairs, on the East, by Meadows belonging to Garret Pest; on the South by Meadows which formerly belonged to Christian Garrebrants deceased, and on the West, by the Bridge Creek." 1797, Liber E. p. 371.

Manorton. A proposed name for a part of West New Brighton or Factoryville, as it was formerly called. *Richmond County Gazette*, Dec. 10th and 17th, 1862.

Acre of Mystery. A name for the burying ground on the Poor House farm. A great many unknown persons are buried there.

Battery Morton. Shown on T. R. Hassler's Coast survey map (1846?) as lying back of the light house at the Narrows.

Little Dublin. A hamlet on Wilson Avenue at Eltingville. Wilson Avenue is connected with the Amboy Road by a short lane known as the Wood Road.

Poke Town. A nickname for the small settlement on Poverty Lane between the Willowbrook Road and New Springville. Named after the Green Heron or Poke.

Arentsville, Eel Town, Etc. "We trust that no such excitement will ensue as arose upon the question of calling the village 'Tottenville' or 'Arentsville.' The atmosphere of Tottenville and its vicinity in those days was of a very unwholesome and sulphurous character. Even Eel Town, Huckleberry Grove, 'Pison Pint,' Devil's Pit, Crow's Ridge, and other small villages were all affected by it." *Richmond County Gazette*, Dec. 28, 1870.

Mt. Hermon. Locality about the junction of Amboy Road and Biddle's Road. A Presbyterian chapel, afterwards a school, bearing that name was built there about forty years ago.

Slam's Row. On the east side of Griffin Street, Tompkinsville. "A stabbing affray occurred on Saturday night, in the neighborhood of 'Slam's Row,' in which a man named Fitzpatrick was severely injured." *Richmond County Gazette*, March 20, 1861.

Jew's Buildings. An account of the burning of a barn, in the rear of the "Jew's Buildings," at Clifton, is given in the *Richmond County Gazette*, Oct. 28th, 1863.

Dutch Block. A nickname for a row of houses on the west side of Jersey Street, New Brighton, about two hundred feet south of Richmond Terrace.

Buffalo Corners. Brown's Saloon, once situated on the corner of Bennett Street and Cottage Place, Port Richmond, displayed a buffalo's head over the door that gave the name to the corner. In the *Richmond County Sentinel* for Jan. 24th, 1877, there is an account of a strange phase of insanity exhibited by a person living at "Buffalo Corners in Port Richmond."

PART III

NEW REFERENCES TO NAMES MENTIONED IN PAMPHLET OF 1896.

Prince's Bay. "Prince's Bay, so called because a British prince once landed there during the Revolution, is a barely perceptible indentation of the coast." *Richmond County Gazette*, Feby. 20th, 1867.

Narrows. "A quarter of a century ago, when I dwelt at the 'Narrows,'—it was not called Clifton then, but all the shore between Van Duzer's and the forts was embraced in the general term of the 'Narrows,' Stapleton had not been born nor Clifton dreamed of . . ." *Richmond County Gazette*, March 7th, 1860.

Sandy Brook. 1720, Liber C. p. 104; 1726, Liber D. p. 81.

Abraham Tappen's Brook. Mentioned as lying to the west of Blazing Star, now Rossville, in 1774. Liber E. p. 57. (See 'Gene's or Tappen's Creek').

Mark's Creek. 1784, Liber E. p. 91; 1792, Liber E. p. 348.

Daniel's Neck. " . . . also twenty acres of Meadow lying and being on Staten Island aforesaid on the southwest side of a Certain place Commonly Called Daniel's Neck to the northeast and east of a Certain Creek which bounds the Meadow ground now in the possession of the said Mark Dusachoy." 1734. Liber C. p. 454.

Big Hummock (Beulah) and Little Hummock are situated on Daniel's Neck. (See Great Meadow Island).

Tunesson's Neck or Black Point. "Against John Tunessin's Neck on the northwest side of the said Island." 1729. Liber C. p. 437.

" . . . commonly called or known by the name of John Tuneson's Neck, granted to the said John Tuneson by a Patent from Anthony Colven, Goven^r of the Province of New Amsterdam, now New York . . ." 1741-2. Liber D. p. 359.

"Whereas Anthony Colve Govern^r General of New Netherland under their High Mightinesses the Lords States General of the United Netherlands, and his serene Highness the Prince of Orange, Did by Virtue of a Patent or Grant, bearing Date the 10 Ober, 1674, Give and Grant unto John Tunisson Van Pelt a Parcel of Land, Scituate upon Staten Island known by the name of Black Point being the first Point to the Southward of Dirck De Noorman, bounded on the south side by the Creek, on the West side by the Kill Van Koll on the North side by the Creek, on the East side by the Woods of the Lords States Gen', with free Egress at the said Woods." 1752. Liber D. p. 375.

"John Tunesson's Neck or Black Point." 1743. Liber D. p. 394.

Old Place is on Tunesson's Neck.

Palmer's Run, Dongan Creek, or Bodine's Mill Creek. "Dongan Creek Causeway" is mentioned in the *Richmond County Gazette*, Sept. 24th, 1873. See Causeway. "Bodine's Mill Creek" is mentioned in legal notice in *Richmond County Gazette*, April 12th, 1876, and in other similar notices.

Burnt Island. " . . . near a certain place known by the name of the burnt Island." 1784, Liber E. p. 449.

Dongan's Island. "Also a certain Island of Salt Meadow situate in the Sound between Jersey and Staten Island commonly called Dongan's Island, containing by estimation One Hundred acres." 1794, Liber E. p. 343.

Big Hummock or Beulah Land. " . . . On the Westerly side of Old Place Creek, Beginning at the Southwesterly corner of Old Place Creek and the Hummock (so called) . . ." 1869. Liber 82; Deeds, p. 488.

Split Rock. "During the low tide on Thursday caused by the extraordinary winds, Split Rock, which is just below the dock of the Corinthian Club House, at Tompkinsville, was visible, some two feet of it appearing above the water. This rock is well known to navigators and is not often seen." *Richmond County Sentinel*, Dec. 31st, 1887.

Towd, Todt, Toad or Dongan Hill. The following is from a letter in the *Staten Islander*, Dec. 14th, 1898:

Ralph's Island. "Island of meadow sold by Abraham Ralph to David Mersereau. 1799, Liber E. p. 436.

TO THE EDITOR.

SIR: Pray use your powerful influence in stamping out the senseless awkward name "Toadt" applied to a beautiful Staten Island hill. The great co-operative movement in England had its small beginning on Toad lane, Rochdale. Visiting the place the secretary told me the name was a corruption of "the old," "Towd." That section was settled by Hollanders, who said "Towd Man" and "Towd Fellow," for "The Old Man," and "The Old Fellow."

That part of Staten Island southwest of the Fort was settled by Hollanders and was known as the Old Town or Dorp, as there is now New Dorp. There is also Old Town road or lane leading from the Richmond road. The Old Town probably became corrupted to "Towd Town" and the hill back of it to "Towd Hill." I have seen it spelled in an old document "Toude Hill." The name had no relation to an animal except in sound. To avoid such a suspicion it has been misspelled in various ways, even the senseless barbarous "Toedt." Pray help stamp this misnomen out and call it Towd or Toude or Dongan Hill. . . . W.
Clifton, S. I., December 10, 1898.

Similar letters to the above appeared in the *Richmond County Gazette* many years ago, and in the *Staten Island Gazette and Sentinel*, Oct. 24th, 1883. Both of them were written by J. O. Woods.

Crips' Back. "Also all that certain lot of land . . . in the Town of Westfield near the Fresh Kill, the same being the southwesternmost part of the tract or lot of land called Crips' Back . . ." *Richmond County Gazette*, May 10th, 1865.

Thrifty Valley. "The fire on Saturday night was in a small house in Thrifty Valley, near the Quarantine walls." *Sepoy*, March 12th, 1859.

Watering Place. "Tract, piece or parcel of Land situate and being in Richmond County upon Staten Island near the Watering place on the East Side of the said Island." 1719, Liber C., p. 55. Also 1726, Liber C., p. 251.

Cruser or Boiling Spring. "The curious natural phenomenon known as the boiling Spring [is] at Elliotteville; a spring from which bubbles of gas continually escape in such profusion as to resemble in appearance the operation of boiling." *Richmond County Gazette*, Dec. 17th, 1862.

Elliott's Pond or The Rink. Formerly a large dense swamp called Biddle's Swamp and later Kingsbury's Swamp.

Great Swamp. 1717, Liber C. p. 63; 1726, Liber C. p. 223, and p. 308; 1793, Liber E. p. 206.

Fresh Meadow. "Tract or piece of Land beginning at a white Oak Tree Standing or growing by a Rock by the side of a Small fresh meadow bearing northerly from a pond of water commonly called the ffresh pond which white oak Tree is one of the Marked Trees of Philip Wells." 1721. Liber C. p. 85. Also mentioned in 1731, Liber D. p. 8.

Great Kill Meadow. Mentioned in 1786, Liber E. p. 170, and in advertisement in *Richmond County Gazette*, Oct. 15th, 1862.

Ryers' Ferry. 1784, Liber E. p. 166.

Decker's Ferry. 1792, Liber E. p. 248.

Watson's Ferry. 1762, Liber D. pp. 497 and 501.

Darby Dryles Ferry. 1774, Liber E. p. 60. " . . . formerly called Watson's Ferry," 1785, Liber E. p. 94.

Simonson's Ferry. 1774, Liber E. p. 62.

Billopp's Ferry. 1763, Liber D. p. 594; 1774, Liber E. pp. 57 and 60.

King's Highway. 1727, Liber C. p. 256. King's Road. 1730, Liber C. p. 387. 1735, Liber D. p. 141. "King's highway or Amboy Road." 1762, Liber D. p. 481. The present Richmond Road is the one usually referred to as the King's Highway.

Corsen Avenue. "Corsen Avenue sometimes called Vanderhilt Avenue . . . " A Peter Stuyvesant owned land there. *Richmond County Gazette*, Aug. 10th, 1859.

Egbert's Lane. Mentioned by name in Liber E. p. 1, 1765. Tunis Egbert, Abraham Egbert and Henry Latourette, executors of the last will and testament of James Egbert, sell land to Capt. John Gifford.

The Glebe. "Plantation Called Duxbury's Glebe." 1765 Liber D. p. 609.

Quarantine. The appraisement in 1800 of the Quarantine Ground at what is now New Brighton, by fire commissioners is to be found in Liber E. p. 454. Thirty acres of land, valued at \$5,500, were taken.

South Shore, South Side or South Quarter. " . . . situate Lying and being in Richmond County aforesaid in the South Quarter so Called . . . " 1736, Liber D. p. 25.

Commons. " . . . at Karles Neck at the Fresh Kill upon Staten Isl- and in the County of Richmond in the Province of New York . . . and bounded South East and South west by the Commons . . . " 1728, Liber D. p. 125.

Nieuwe Dorp or New Town. "Tract of Land situate lying and being at new town alias new dorp at the South side of Staten Island." 1719, Liber C. p. 108. Called "New Durrop," 1762, Liber D. p. 591; 1786, Liber E. p. 107.

"New Durrup Lane." 1769, Liber E. p. 15; 1790, Liber E. p. 301. *Richmond County Free Press*, April 26th, 1834.

Governor's Lott. "All that certain parcell of Land lying at the New Diropp on the South Side of the sd County formerly called the Governor's Lott. . . . " 1714. Liber C. p. 48.

" . . . bounded to the south east by the meadow to the northeast by the high way to the north west by the Land of the Governors to the south west by the Land of Abraham Lutine . . ." 1720. Liber C. p. 418.

Old Place. 1799, Liber E. p. 438.

Edgewater. Notice is hereby given, pursuant to statute, that an application will be made to the next legislature of the State of New York to incorporate the town of Middletown, and so much of the town of Southfield as lies northerly of the New Dorp Lane or such other portion as may be thought best into a village to be called "Edgewater." Dated Oct. 1st, 1865. *Richmond County Gazette*, Dec. 13th, 1865.

Edgewater, New Brighton, Port Richmond. "The charters for the incorporation of a part of Middletown under the name of the village of Edgewater, a part of Castleton under the name of New Brighton, and a part of Northfield under the name of Port Richmond, have been carefully revised and sent to the legislature, where it is supposed they will be passed and become laws of the State." *Richmond County Gazette*, March 14th, 1866.

London Bridge, Bull's Head. "In a somewhat sequestered spot near 'London Bridge,' on our island, a youth and maiden dwelt from childhood to that tender age, when eyes enquire 'what's trumps,' and hearts respond." *Richmond County Gazette*, June 15, 1864. Also mentioned in the *Gazette* May 21, 1862.

Marshland, Green Ridge. "At a meeting of the citizens of Marshland, it was decided to call the place Green Ridge, the boundaries extending from Valley Forge to Gifford's Lane." *Richmond County Gazette*, March 24th, 1875.

Camp Washington. This name is older than the war of the Rebellion, as appears from the following: "We have received an invitation to attend the game of the Quickstep Baseball club, which will be played on Thursday, Nov. 24 (Thanksgiving Day), at Camp Washington. Game called at half past one o'clock." *Richmond County Gazette*, Nov. 23, 1859.

Camps. Camp Lafayette, New Dorp. "Camp Herndon, on the Stapleton Flats." *Richmond County Gazette*, Sept. 11th, 1861. Staten Island railroad notice: "Stopping at Camp Scott, Garretson's Lane, New Dorp (Camp Yates) . . ." *Gazette*, Sept. 25, 1861. "Camp Leslie, Clifton Park," Simonson avenue, Clifton. *Gazette*, Oct. 2, 1861. "Camp Low at Elm Park." *Gazette*, Nov. 6, 1861.

Yellow Row. "A building at Factoryville known as the 'Yellow Row' near the residence of Col. Barrett was struck by lightning during the storm on Thursday last." *Richmond County Gazette*, Aug. 9th, 1865.



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|--------------------------------|--|
| 1. The Meadows. | 16. Uncle Jake Manee's Lane. |
| 2. Garretson's Lane. | 17. Old Eliza's Road. |
| 3. Mt. Hermón. | 18. Pinefield Pond. |
| 4. Biddle's Road. | 19. Biddle's Pond. |
| 5. The Elm Tree. | 20. Christopher's Swamp. |
| 6. The Old Elm. | 21. " Gully. |
| 7. Elliott's Pond. | 22. Kingsbury's or Uncle Ed. Wood's Brook. |
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| 9. The Big Rock. | 24. Albert's Bluff. |
| 10. Storer's Lane. | 25. Uncle Aaron Van Name's Swamp. |
| 11. Storer's Pond. | 26. Garretson's Pond. |
| 12. Boiling Spring. | 27. Blacksnake Pond. |
| 13. " " | 28. Cherry Hill. |
| 14. Uncle Nicky Corson's Lane. | |
| 15. Uncle Ben. Joline's Lane. | |

PROCEEDINGS
OF
The
Natural Science Association
of Staten Island.

VOLUME IX.

November 14th, 1903, to June 3d, 1905.

EDITED by ARTHUR HOLLICK, SECRETARY.

NEW BRIGHTON, N. Y.,

1905,

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PROCEEDINGS
OF
THE NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. IX No. 1. NOVEMBER 14th, 1903.

The twenty-third Annual Meeting of the Association was held at the Staten Island Academy, with the president in the chair.

Reports of officers for the past year were read and approved, as follows:

Secretary:
Number of members on roll at date of last annual meeting.....99
Since elected.....16
Resigned8
Deceased1
Leaving at date (including 1 life and 2 honorary)..... 106

Treasurer:
Balance in hand at date of last annual meeting.....\$326.12
Dues received..... ,...282.00
Subscription to and sales of Proceedings..... 55.80
Interests on deposits in savings bank... .. 10.59
Total income \$674.51

Disbursements:
Printing Proceedings\$158.61
Library equipment (binding, \$54.75; cases, \$43.50)..... 98.25
Public lectures..... 67.55
Postage and expressage. . . 23.73
Subscriptions to periodicals... 6.00
Total disbursements \$354.14
Balance in hand \$320.37

Curator:
Museum:
Number of separate donations....8
Number of specimens included in the above (approximately)1,158
Classified as:
Mineralogy (approximately) 1,000
Zoology (approximately) 150
Geology..... 5
Botany.....2
Archaeology.....1

Library:
Number of societies and institutions from which exchanges were received 44
Accessions:
By exchange:
Bound volumes12
Parts of volumes, unbound..207
Separate papers..52
By donation:
Bound volumes..... 10
Parts of volumes, unbound..118
By subscription:
Parts of volumes, unbound...17

Ten sections were added to the book cases, and seventy-two volumes were bound.

The Committee on Public Lectures reported upon the success attending the course given in connection with the Staten Island Academy, and called attention to the recent death of Mr.

Cornelius Van Brunt, whose two lectures had been so generally enjoyed.

On motion, the committee was requested to prepare a suitable minute in relation to the matter, for incorporation in the Proceedings. The committee subsequently prepared the following:

It is with sincere regret that we record the death, on October 1st, of Mr. Cornelius Van Brunt, who was so widely and favorably known in the public lecture field, especially by reason of his unique and exquisite series of colored lantern slides, with which his lectures were illustrated.

By this Association he is pleasantly remembered in connection with the lectures on "Wild Flowers in and about Greater New York" and "The Canadian Rockies and Their Flowers", delivered before the Association on March 19th, 1902 and February 5th, 1903, respectively: lectures which were a revelation and a delight to those who were privileged to attend.

Mr. Milo D. Herron, New Brighton, was elected an active member.

The election of officers for the ensuing year was then held, with the following result:

President—Howard R. Bayne.

Secretary—Arthur Hollick.

Treasurer—J. Blake Hillyer.

Curator—C. A. Ingalls.

Trustee—Wm. T. Davis.

On motion, it was *Resolved*: that the regular meetings of the Association during the ensuing year be held on the second Saturday evening of each month, except June, July, August and September.

SPECIMENS EXHIBITED.

Dr. Arthur Hollick exhibited a specimen of Hudson shaly sandstone,

consisting of a mass of *Orthis testudinaria* Dalm., obtained from a large boulder on the west side of Steuben St., Concord, to which attention had been called by Mr. L. W. Freeman. The boulder is a large one and is beautifully glaciated.

Dr. Hollick also exhibited a finely glaciated pebble of compact serpentine and a mass of boulder till, obtained from a caisson excavation in the lower part of Manhattan Island, contributed by Mr. E. C. Delavan.

Mr. Philip Dowell exhibited specimens of *Dryopteris Bootii* (Tuckerm.) Underw. and *D. Goldieana* (Hook.) A. Gray, collected on the east side of South Ave., near Arlington station, representing two ferns not previously reported from the Island.

Mr. Wm. T. Davis exhibited a living specimen of a *Hypnum* moss and read the following memorandum:

In April, 1893, some sand, pebbles and a few sprays of *Hypnum* moss were placed in water in the quart jar here shown. The moss has continued to flourish during the past ten years. On several occasions a snail was dropped into the jar, and when the moss grew too high it was shoved back into the pebbles and sand. The only other change made during these years was to add a little water from time to time, as that in the bottle evaporated.

Mr. Davis also exhibited thin wood sections and a series of photographs of Staten Island trees, prepared by Mr. Romeyn B. Hough of Lowville, N. Y.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. IX No. 2.

DECEMBER 12th, 1903.

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, New Brighton.

In the absence of the president, Mr. George S. Humphrey was elected chairman *pro tem*.

The following were elected to active membership :

Llewelyn W. Freeman, Mariners' Harbor.

Wm. B. Grubbe, Port Richmond.

John T. Featherstone, New Brighton.

D. L. Bardwell, New Brighton.

Mr. Wm T. Davis read the following paper :

THE DRUMMING HABIT OF THE WHITE-FOOTED, OR DEER MOUSE.

In *Country Life in America* for November, 1903, Mr Ernest H. Baynes, of Stoneham, Mass., has an article on the White-footed Mouse. He says : "I have recently discovered what may prove to be a means of communication between different individuals of this species. Both when wild and when in captivity, they have a habit of drumming with one fore-foot, either right or left, on a dry leaf, the floor, or the netting in front of a cage; and this signal, if signal it is, is frequently, if not usually, answered at once by any other white-footed mice within hearing. They will also respond quickly to an imitation of the sound, made by scratching with the thumb-nail on a board or any other res-

onant body While drumming, the paw of the mouse is half-closed, with the nails downward, and it vibrates with great rapidity."

"That the white-footed mouse is dumb and communicates with its species by drumming with its toes," is announced as one of his newly-discovered facts in natural history, by Mr. Mason A. Walton, in "A Hermit's Wild Friends; or Eighteen Years in the Woods," which has been recently published.

In these Proceedings for January, 1886, this same drumming habit of the white-footed mouse was commented upon by me as follows: "What I wish to particularly record is a habit which I have never seen mentioned, a way I think which they have of communicating with one another, especially when surprised. This is accomplished by beating one of the fore-paws very rapidly on the floor of the cage, or the limb of a tree, producing a noise similar to the tearing of a small piece of paper."

At the meeting above mentioned, live specimens of the mice were shown, and produced the sound with their fore-paws many times for the benefit of those present.

Mr. Davis also exhibited specimens of the four-toed salamander, preserved in alcohol, and read the following comments :

THE FOUR-TOED SALAMANDER ON STAT-
EN ISLAND,

In 1902 the New York State Museum published a "Catalogue of New York Reptiles and Batrachians," by Edwin C. Eckel and Frederick C. Paulmier, Ph D. In the preface, the Director of the Museum states that information regarding the occurrence and distribution of the various species is much to be desired, and that local faunal lists would be of much value. Further on, under the head of *Hemidactylium scutatum*, the four-toed salamander, we read that it is "probably to be found in this State."

A list of the Reptiles and Batrachians of Staten Island was published in these Proceedings for October, 1884, and it was there stated that the four-toed salamander was to be found on Staten Island. I am able to exhibit four specimens from the Island, and can add that most of the specimens

seen have come from the low-lying places in the hills back of the Moravian Cemetery.

NOTES AND MEMORANDA.

Dr. Arthur Hollick exhibited a mass of native copper, weighing about 6 lbs., which was transmitted by Mr. L. P. Gratacap, with the information that it was alleged to have been found "in the debris of a washout," on Grymes' Hill, in 1880, by Mr. J. G. Ennis. It may be a drift boulder, from New Jersey, or its occurrence may have been due to human agency. The surface shows indications of hammer or chisel marks.

Mr. L. W. Freeman presented an indian celt or skin scraper, found at Mariners' Harbor; also an elongated fragment of shale, beautifully rounded and scratched by glacial action, found by Mr. Peter M. Post at Holland Hook.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. IX, No 3.

JANUARY 6th, 1904.

The regular monthly meeting of the Association was held at the residence of Mr. Wm. H. Mitchill, Port Richmond. In the absence of the president Mr. Mitchill was elected chairman *pro tem*.

Mr. Herbert M. Dunning, New Dorp, and Mr. Benjamin J. Stanton, Tompkinsville, were elected to active membership.

Mr. A. B. Skinner read the following paper:

A SHORT ACCOUNT OF THE ALGONKIN INDIANS OF STATEN ISLAND.

When the early Dutch settlers and explorers arrived in New York Bay they found its shores inhabited by numerous small but fierce and warlike tribes of Indians, of the great Algonkin stock. Manhattan and Long Island, and the nearby mainland, were inhabited by subtribes of the Mohegan or Wolf Indians, while Staten Island and New Jersey were in the territory of the Leni-Lenape or Delaware Indians.

These Indians were brave and warlike. They cultivated some maize and tobacco, but lived largely upon the fish and shell fish which abounded in the vicinity, although they were also good hunters, as the bones of the lynx, bear, wolf, beaver, deer, wild turkey and other animals, so abundant in the shell heaps, prove.

Their lodges were built of bark or salt-meadow grass, and sometimes these rivalled in length the famous long houses of the Iroquois. Some of the thatched houses, however, were not more than thirty feet in circumference and were shaped like a hay stack, with a smoke hole at the top. Around the wall there was a raised seat or couch upon which the occupants reclined or sat.

In order that the lodge might not be burned too frequently, (for according to the Shinnecock Indians of Long Island this was the greatest drawback to life in a thatched lodge) the fire was kept in a deep pit in the center, and almost all rubbish, such as broken pottery, pipes, bones and the like, found their way into this convenient receptacle, where, preserved by the charcoal and the lime from the inevitable oyster and clam shells, they have remained to this day. The discovery of several of these pits has been reported from time to time in our Proceedings. Often in winter, when the ground was frozen too hard for digging, the dead were interred in these all useful pits, and in war time it is probable that many precious articles were concealed in the ashes.

The canoes which our Indians used were made of wood, the canoe birch not growing as far south as this. A tree

was first girdled and allowed to die, then by judicious application of fire and a grooved axe it was felled. Fires were then built upon its upper surface and the charred wood was chopped or scraped away with stone axes, adzes, chisels and gouges, until a hollow shell remained. The graceful shape was given by the same process and the canoe was complete. Sometimes these canoes were forty or more feet in length.

The implements of domestic use were pottery, bark and stone vessels, baskets, wooden spoons and bowls, etc.

For the chase the stone or antler-tipped arrow and a sinew-backed bow, perhaps six feet in height were used. Bone hooks were possibly used in fishing, but the net was probably a far more popular device on Staten Island, as may be inferred from the large number of net-sinkers which have been found.

In time of war the bow and arrows and the stone knife and tomahawk, played an important part, but after the advent of the whites these were set aside for the rifle, steel or iron trade axe, and knife.

In preparing for war the warriors were accustomed to shave their heads, leaving a small crest running from forehead to neck, which stood upright, and gave a most ferocious appearance to the wearer. They probably went almost naked, being clad in but breech clout and moccasins, and were well oiled to prevent an enemy from securing a good hold in close quarters. Horrible devices were painted upon the face and body, to inspire fear, or from a savage idea of ornament.

In the year 1679 when Hans Dankers and Peter Sluyter, the Labadist preachers, visited Staten Island, they made no mention of seeing Indians here, and as the majority had left four years before, in 1675, this is not to be wondered at. Nevertheless they saw many Indians at "Najack" (Fort Hamilton),

and as these Indians (probably the Canarsies) were essentially the same as our Raritans, I may perhaps be forgiven for quoting their description of them.

"We soon heard a noise of pounding, like threshing, and went to the place whence it proceeded, and found there an old Indian woman busily employed beating Turkish beans out of the pods by means of a stick, which she did with astonishing force and dexterity. Gerrit [their guide] inquired of her, in the Indian language, which he spoke perfectly well, how old she was, and she answered eighty years; at which we were still more astonished that so old a woman should still have so much strength and courage to work as she did. We went thence to her habitation, where we found the whole troop together, consisting of seven or eight families, and twenty or twenty-two persons. Their house was low and long, about sixty feet long and fourteen or fifteen wide.

"The bottom was earth, the sides and roof were made of reed and the bark of chestnut trees; the posts or columns were limbs of trees stuck in the ground and all fastened together. The ridge of the roof was often about half a foot wide from end to end, in order to let the smoke escape, in place of a chimney. On the sides of the house the roof was so low that you could hardly stand under it. The entrances, which were at both ends, were so small that they had to stoop down and squeeze themselves to get through them. The doors were made of reed or flat bark. In the whole building there was no iron, stone, lime or lead.

"They build their fire in the middle of the floor, according to the number of their families. so that from one end to the other each boils its own pot and eats what it likes, not only the families by

themselves but each Indian alone when he is hungry, at all hours, morning, noon and night. By each fire are the cooking utensils, consisting of a pot, a bowl or calabash and a spoon, also made of calabash. These are all that relate to cooking. They lie upon mats, with their feet towards the fire on each side of it. They do not sit much upon anything raised up, but, for the most part, sit upon the ground or squat on their ankles. Their other household articles consist of a calabash of water, out of which they drink, a small basket in which to carry their maize and beans and a knife. The implements are, for allage, merely a small sharp stone; for hunting, a gun and a pouch for powder and lead; for fishing, a canoe without mast or sail, and not a nail in any part of it, though it is sometimes fully forty feet in length, fish hooks and lines, and a scoop to paddle with in place of oars.

"All who live in one house are generally one stock, as father and mother, and their offspring. Their bread is maize pounded in a block by a stone, but not fine; this is mixed with water and made into a cake, which they bake under the hot ashes. They gave us a small piece when we entered, and although the grains were not ripe, and it was half-baked and coarse; we nevertheless had to eat it, or at least not throw it away before them, which they would have regarded as a great sin, or a great affront. We chewed a little of it and managed to hide it. We also had to drink out of their calabashes the water which was very good.

"Here we saw the Indians who had come on board the ship when we arrived. They were all joyful at the visit of our Herrit who had long dwelt thereabouts and was an old friend of theirs. He gave them two jews harps, whereat they were much pleased and at once began to play them, and fairly well. Some of their chiefs—who are their

priests and medicine men and could speak good Dutch—were busy making shoes of deer leather, which they make soft by long working it between the hands. They had dogs, besides fowls and hogs, which they are gradually learning from Europeans how to manage. Toward the last we asked them for some peaches, and their reply was, go and pick some! which shows their politeness! However, not wishing to offend them, we went out and pulled some. Although they are such a poor miserable people, they are licentious and proud, and much given to knavery and scoffing. As we noticed an extremely old woman (not less than a hundred one would think), some saucy young fellows jeeringly answered; twenty years! We observed the manner in which they travel with their children, a woman having one which she carried on her back. The little thing clung tight around her neck like a cat, and was held secure by a piece of duffels, their usual garment."

Dr. Arthur Hollick read the following review of

RECENT LITERATURE RELATING TO
STATEN ISLAND.

Catalogue of the Binney and Bland Collection of the Terrestrial Air-breathing Molluscs of the United States and Territories, in the American Museum of Natural History, etc. L. P. Gratacap. Bull. Am. Mus. Nat. Hist., Vol. xiv (Dec 3, 1901) pp. 335-403, pls. xli-xlvi. In this catalog the following species are listed from Staten Island, without however any information in regard to the exact localities:

Zonites (Conulus) fulvus (Drap.) Binney.
Zonites (Gasterodonta) suppressus (Say)
Binney.

Ferussacia subcylindrica (Linn.)*

Pupa (Leucocheila) fallax Say.

Pupa (Vertigo) ovata Say.

Strobila labyrinthica (Say) Morse.

Triodopsis fallax (Say)*
Mesodon albolabris (Say) Morse.
Mesodon thyroides (Say) Tryon.
Vallonia pulchella (Muell.) Binney.
Punctum pygmæum (Drap.)*
Succinea avara Say.
Succinea aurea Lea.
Succinea totteniana Lea.*

Those marked with an asterisk (*) are not listed in Mr. Sanderson Smith's "Catalogue of the Mollusca of Staten Island", published as Extra No 5 of our Proceedings, in March 1887, and may be considered as additions to our faunal record.

MINOR NOTES.

Dr. Philip Dowell exhibited the following ferns, not heretofore reported from the Island:

Dryopteris simulata Davenp., collected near Richmond Valley, Oct. 4th, 1903;

Dryopteris cristata marginalis Davenp., collected on the east side of South Ave., near Arlington Station, Oct. 31st, 1903.

Dr. Arthur Hollick exhibited specimens of drift material, collected from exposures along the line of the South Side Boulevard, in the vicinity of Giffords. Amongst the specimens was a fragment of hardened Cretaceous clay, containing plant remains, similar to those which have been found at Arrochar, Prince's Bay and Tottenville. Dr. Hollick suggested that careful search should be made for more of this material as it is likely to carry well preserved leaf impressions.

Mr. John T. Featherstone exhibited fragments of Lower Helderberg limestone, containing well preserved specimens of *Leptaena rhomboidalis* (Hall) and *Spirifer macropleura* (Conr.), collected on the Fingerboard Road.

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No 4.

FEBRUARY 13th, 1904.

The regular monthly meeting of the Association was held at the residence of Mr. Lester W. Clark, New Brighton, with the president in the chair.

The following were elected to active membership:

Mr. S. A. Blan, Port Richmond.

Mr. Lewis Denton, West New Brighton.

Mr. L. W. Freeman presented copies of a series of rain gauge charts, showing the records made by a Draper's self-recording pluviometer for the three heaviest rainfalls of 1903, and, after explaining the way in which the instrument works, read the following paper:

THE EXCESSIVE RAINFALLS OF 1903.

As the excessive rainfalls of 1903 were remarkable in regard to their number, rate and duration, and as the facts here presented are the results of instrumental measurements and personal observations, I have deemed it advisable to put them in such a shape that they can be made a record of this Association.

Without going into the history of reliable rainfall measurements, the subject may be introduced by stating that for years it had been the aim and object of the writer to have an instrument installed on the Borough Building that would automatically register the rainfall.

In a report to our fellow-member, Commissioner of Public Works Louis L. Tribus, on the status of affairs in the Bureau of Sewers, dated Jan. 31st, 1902, it was recommended by the writer that such an instrument be purchased and set up. Commissioner Tribus promptly approved of the measure, and in September, 1902, the instrument was installed and has been in operation since that time.

Subsequently, Deputy Commissioner of Water Supply, George S. Scofield, also a member of this Association, had a similar instrument installed at the pumping-station at Tottenville, and to-day there are in this Borough, two Draper self-registering pluviometers, that automatically record, to the 100th of an inch in quantity, and to the 12th of an hour in duration, the rainfall in their respective localities.

The objects and uses of an instrument of this character are, first: To determine the amount of rain that falls during a given time; which fact, taken in connection with the amount of storm water discharged by water courses, sewers, etc., during the same time, as determined by gauging of such water courses and sewers, furnishes what is technically known as the "run-off," an important and necessary factor in the designing of sewers of the proper sizes and grades for the efficient dis-

posal of storm water, as well as in the estimating of storage for water supply purposes.

Second: The City is frequently made the defendant in suits at law for loss or damage sustained by reason of floods caused by extraordinary rainfalls. There being no bond of sympathy between this instrument and either of the contestants, all biased evidence as to the time, amount, rate and duration of the element that caused the damage, goes down before the impartial record of the rain-gauge.

Third: Every record noted and filed adds a little to the knowledge that may, at some future time, result in the discovery of a natural law that governs the recurrence of periods or seasons of excessive rainfalls. In any event, reliable rainfall data wherever observed, will help to augment the world's knowledge of super-terrestrial forces, about which, though much may be known, much more remains to be learned.

The Storm of June 29, 1903.

The month of June, 1903, may safely be recorded as having been a wet month,—6.98 inches of rain having fallen between June 7th and June 28th. The total fall for the month was 9.97 inches.

This particular storm made its appearance at about the beginning of the season, when storms of like character can usually be expected in these latitudes.

The rain began at 4.36 A. M., and ended at 1.30 P. M.

Total time of fall, 8 hours, 54 minutes.

Total fall of rain, 2.99 inches.

Between 9 and 10 A. M., 1.46 inches of rain fell. The highest rate of fall was 4 inches per hour, for 3 minutes. The second highest rate, 3 inches per hour, for 10 minutes. The third highest rate, 2.4 inches per hour, for 5 minutes. All of the above rates were between

9.33 A. M. and 9.51 A. M., and during the elapsed time of 18 minutes, 0.9 of an inch of rain fell, representing a rate of 3 inches per hour. An examination of these figures shows us that 49 per cent. of the total fall occurred during 11 per cent. of the total time of fall.

Storms of this character are liable to cause floods, especially at the lower levels of small drainage districts with steep slopes.

The Storm of September 16, 1903.

With the wind at an estimated velocity of 60 miles per hour, accompanied by torrential rain, this storm presented all the aspects of a West India hurricane in its home latitudes. Houses were unroofed, trees were uprooted, and the beating force of the wind-driven rain absolutely cut the surfacing from the macadam roads throughout the Borough, while storm sewers and culverts were gorged, and all things considered, this was the storm of greatest violence of 1903. The storm centre passed off the coast about 100 miles below New York, and probably dissipated itself in that graveyard of hurricanes, the mid-North Atlantic.

The rain began at 7.30 A. M. and continued, at varying rates, until 1 P. M.

Total time of fall, 5 hours and 30 minutes.

Total fall of rain, 3.24 inches.

Between 12 M. and 1 P. M., 1.79 inches of rain fell. The highest rate of fall was 4.31 inches per hour, for 14 minutes. The second highest rate, 2.64 inches, for 5 minutes. The third highest rate was 2.17 inches, for 12 minutes, giving 55 per cent. of total fall in 18 per cent. of total time of fall. The gauge at Central Park Observatory recorded for this storm, 1.63 inches. It was a dangerous storm in every sense of the word.

The Storm of October 8 and 9, 1903.

This storm differed in every respect from the two previously described.

While the storm of June 29th was the great Summer storm of unusually high, though varying rates of rainfall, and probably more or less local in extent, the storm of September 16th, with high and varying rates of rainfall, swept up and off the coast in obedience to the laws that govern storms of cyclonic origin and character, never reaching the eastern end of Long Island, the storm of October 8th and 9th, presented remarkable features, not found in any of the above, in regard to duration of rainfall, constancy of rate, and extent of area of influence. There was nothing unusual in the character of this storm. It extended over hundreds of square miles of territory throughout the middle seaboard states, and the rate of rainfall was remarkably constant, as shown by these copies of the records, as well as by the fact that it rained for 30 hours without ceasing.

The rain began at 9 A. M., October 8th, and ended at 3 P. M., October 9th.

Total time of fall, 30 hours.

Total fall of rain, 9.83 inches.

The highest rate during the storm was 2.0 inches per hour, for 9 minutes.

The highest rate for any one hour during the storm was 0.8 of an inch.

Storms of this character are liable to cause floods at the lower levels of the river, as well as small drainage districts.

Some idea of the magnitude of this storm may be realized by considering the fact that the average annual rainfall in this rain belt, for the past 34 years, was 43.15 inches, with the fact that nearly 23 per cent. of that annual average was precipitated in the 30 hours of this storm. Finally, some idea of the dynamics of this storm may be obtained when we consider the fact that a rainfall of 9.83 inches means the depositing of nearly 1,000 gross tons of water on each acre of surface on which that amount of rain falls.

The writer is indebted to our fellow member, Mr. J. T. Fetherston for the analyses of the rain-gauge records and the copies of the same which are herewith presented.

Dr. Arthur Hollick presented a contour chart of the basin of Silver Lake together with copies of analyses of the water, and read the following paper:

SOME RECENTLY DISCOVERED FACTS
IN REGARD TO SILVER LAKE.

At our meeting of Oct. 10th, 1903, I gave an account of the depth and form of the Silver Lake basin, determined from measurements made in connection with condemnation proceedings for Silver Lake Park, and since then, by reason of the same proceedings, we have come into possession of some further interesting facts

Borings were made, as indicated on the chart, at a number of stations around the edge and in the bottom of the lake, in order to ascertain the character of the surrounding and underlying strata. The deepest of these borings was in the lake bed, about 8 feet from the shore, on the east side, near the pavilion, where the following section was indicated:

Station 1-b, East Side of Lake.

Ice and water	8.00 ft.
Mud, largely organic	5.67 "
Fine sand, apparently silt	6.33 "
Gravel, containing a small amount of clay	6.30 "
Sand and clay	3.83 "
Sand, containing a small amount of clay	18.25 "
	<hr/> 48.58 "

Hard rock was struck at this depth, probably a boulder, as all the material below the mud and silt was found to be the typical red boulder till, sand and gravel of which the surrounding shores are composed, derived for the most part from Triassic sandstone and shale.

At the south end of the lake, in the far side of the morainal barrier near the outlet, (Station 4), at a point where the surface of the ground is about five

feet below the level of the lake surface, a boring was made to a depth of 8.25 feet, which revealed nothing but drift deposits, similar to station 1-b.

The most interesting results were obtained from the borings at the north end (toward Logan's spring), and on the west side (toward Hart Park), at both of which stations the underlying soapstone rock was reached. Each of these borings was started close to the shore line, practically at the level of the lake.

Station 2, North End of Lake.

Bog mud	2.25 ft.
Sand and clay	5.41 "
Sand, clay and pebbles	3.59 "
"Hardpan," sand, clay and pebbles	10.17 "
Soft bluish soapstone	12.92 "
	34.34 "

Compact soapstone at bottom.

At this place the soapstone was therefore struck at a depth of about twenty-two feet.

Station 3 a, West Side of Lake.

Grass, bog mud and silt	4.53 ft.
Sand, clay and pebbles	10.33 "
Greenish clay (disintegrated soapstone?)	1.67 "
Soft bluish soapstone	17.75 "
	34.33 "

Compact soapstone at bottom.

If the greenish clay represents, as it apparently does, the disintegrated upper part of the soapstone rock, this latter is only about fifteen feet below the surface at this point.

These facts prove conclusively, what we had always inferred, that the basin of the lake is due, primarily, to a trough in the underlying soapstone with its longer axis in a northeast and southwest direction, which has been dammed by a barrier of drift material at the southern end. They also indicate, what had not occurred to us before, that the barrier at the northern end is not wholly composed of drift, but has as its basis an underlying spur or ridge of soapstone. It is unfortunate that the borings did not determine the level

of the soapstone surface in the deeper parts of the basin.

NOTE.—The borings at stations 1, 1-a, and 3 were abandoned at depths of 7 ft. 6.75 ft. and 14 ft., respectively, on account of striking bowlders. The records in regard to these are therefore not included.

Lake water collected July 17, 1923.

	Pts. per 100,000	Grains per gal.
Appearance, turbid (suspended organic matter)		
Color, yellowish.		
Odor at 100 Far., marshy		
Chlorine	1.2425	
Phosphates, none		
Nitrogen in nitrites, none		
Nitrogen in nitrates, none.		
Free ammonia	0.0010	0.001
Alb. ammonia	0.044	0.005
Hardness before boiling, 2		
Hardness after boiling,		
Organic and volatile matter, (loss on ignition)	4.5	2.61
Mineral matter, not volatile	3.2	1.836
Total solids, by evaporation	7.7	4.465

Lake water collected Nov. 20, 1923, after two weeks of fine weather.

	Pts. per 100,000	Grains per gal.
Chlorine		0.80
Free ammonia		0.005
Alb. ammonia		0.005
Hardness, $1\frac{1}{4}$		
Organic and volatile, (loss on ignition)		2.59
Inorganic residue		2.15
Total solid residue		4.74
Calcium carbonate		1.15
Calcium sulphate, trace		
Iron, trace		
Magnesia, none		

Lake water collected Dec. 7, 1923.

	Pts. per 100,000	Grains per gal.
Calcium carbonate	.30	.17
Magnesium carbonate	.60	.35
Calcium sulphate	1.80	1.05
Sodium and potassium chlorides	.85	.48
Magnesium chloride	.29	.17
Calcium chloride	.12	.07
Iron oxide, (Fe 2 O ₃)	.14	.08
Alumina	.19	.11
Silica	.41	.24
Total mineral matter	4.65	2.71
Total organic matter	2.20	1.28
Total solids	6.85	4.00

Albumenoid ammonia	.0316
Free ammonia	.0252
Nitrites	.0003
Nitrates	none
Chlorine	.8000
Iron	.1360
Carbonic acid gas	.6500
Hardness	2.6000
Alkalinity	.8000
Dissolved solids	4.6500
Suspended solids	.3000
Loss on ignition	2.2000

The following genera of microscopic organisms were detected :

Amphibryon
 Sphaerella
 Sphaeromonas
 Sphaerchaeta
 Sphaerisira
 Sphaerococcus

Water taken from boring 3-a, Dec. 16, 1903.

	Pts. per 100,000
Carbonates of lime and magnesia	5.90
Sulphates of lime	4.21
Chloride of sodium	1.22
Oxide of iron (Fe_2O_3)	.17
Silica and alumina	.80
Total mineral matter	12.30
Organic and volatile	.80
Total solids	13.10
Albumenoid ammonia	.0622
Free ammonia	.0212
Nitrites	.0003
Nitrates	.0050
Chlorine	.7400
Iron	.1200
Hardness	10.6000
Alkalinity	5.9000

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 5.

MARCH 19th, 1904.

The regular meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Fred. F. Hunt was elected chairman *pro tem*.

Mr. E. C. Delavan read a paper on THE DISPUTE BETWEEN THE PROPRIETORS OF EAST NEW JERSEY AND THE DUKE OF YORK, CONCERNING THE TITLE TO STATEN ISLAND, which will be published as a special number of the Proceedings.

Mr. Wm. T. Davis exhibited specimens of Staten Island moths and read the following paper:

PRELIMINARY LIST OF STATEN ISLAND
MOTHS BELONGING TO THE FAMILIES
SATURNIIDÆ, CERATOCAMPIDÆ,
SYNTOMIDÆ, ARCTIIDÆ AND
AGARISTIDÆ.

A list of the hawk moths of Staten Island was published in these Proceedings for January 10th, 1903. This is a continuation of that list and includes the families between the Sphingidæ and Noctuidæ. The species are figured in the recently published "Moth-Book" by W. J. Holland, and are also described by Mr. Beutenmuller in his "Descriptive Catalogue of the Bombycine Moths found within Fifty Miles of New York City."

Chlaenogramma jasminearum Bdv. may now be recorded as an addition to the list of hawk moths, having been captured on the Island in July.

Protoparce rustica Fabr. has been mentioned as an addition in these Proceedings for May 9th, 1903:

FAMILY SATURNIIDÆ.

Philosamia cynthia Drury. June, July, Aug. This imported insect was first noticed on Staten Island about 1882.

Samia cecropia L. June, July, Aug.

Callosamia promethæa Drury. June, July, Aug. Several years ago fifteen cocoons of this species were collected from the same tulip tree and kept separate from all others, for the purpose of noting at what times the moths would emerge therefrom. The dates were as follows:

June 9	one	male
" 16	"	"
" 17	"	"
" 20	"	female
" 23	"	"
" 30	one male and a female	
July 3	one female	
" 7	two females	
" 8	" males	
" 11	three females.	

Callosamia angulifera Walk. June, July, Aug. The cocoons are to be found on the ground under the trees on which the caterpillars have fed Tulip.

(*Liriodendron*). seems to be the favorite food plant.

Tropæa luna L. April to September inclusive. Double brooded and occasionally triple brooded.. I have raised two generations of caterpillars from eggs laid by a moth collected at Kreischerville on the 11th of July. In these Proceedings for April 13th 1895 an account is given of "Scarlet-margined Luna Moths." This form has only been found on the Island in the Spring.

Telea polyphemus Cramer. June, July, Aug.

Automeris io Fab. June, July, Aug.

The allied moth, *Hemileuca maia* Drury, has been found in various parts of New Jersey not far removed from the Island, and no doubt is to be found here also.

FAMILY CERATOCAMPIDÆ.

Anisota stigma Fab.

" *senatoria* S. and A.

" *virginiensis* Drury. June.

" *rubicunda* Fab. May, June.

I am indebted to Mr. Louis H. Joutel for identifying several caterpillars of this genus.

Citheronia regalis Fabr. June, July.

Basilona imperialis Drury. June, July, Aug.

FAMILY SYNTOMIDÆ.

Scepsis fulvicollis Hubner. June, July, Aug., Sept., Oct 21st, 1900.

Lycomorpha pholus Drury. It has been found in mid-summer, but seems to be a rare species on the Island.

FAMILY ARCTIIDÆ.

Eubaphe immaculata Reakirt. May, June.

Eubaphe aurantiaca Hubner.

" a. *rubicundaria* Hubner. Aug.

" b. *ferruginosa* Walker. June

" c. *brevicornis* Walker. June

Utiethisa bella L. June 27th, August, Sept., Oct, Nov. 1st, 1903.

Haploa clymene Brown. Quite abundant in July and August, 1890.

Ecpantheria deflorata Fab. (*E. scribonia*) The larvæ have been found on the Island.

Estigmene aceræa Drury. May, June, July, Aug.

Estigmene cœngrua Walker. (*E. antigone*) May, June, Aug.

Hypantria cunea Drury.

" *textor* Harris.

Isia isabella S. and A. May, June, July, Aug., Sept.

Phragmatobia fuliginosa L. Collected by Mr. Oscar Fulda in August.

Diacrisia virginica Fab. June, July, Aug.

Diacrisia latipennis Stretch. May, June.

Apantesis arge Drury. April 23d 1898. July, Aug.

Apantesis nais Drury. June, July, August.

Apantesis vittata Fab. June, July, Aug. Sept.

Apantesis vittata var. *phalerata*.

Ammalo tenera Hub. (*A. collaris*) June, July.

Ammalo eglenensis Clemens. June.

Euchaetias egle Drury. June.

Halisidota tessellaris S. and A. July

" *caryæ* Harris. May, June.

A note in these Proceedings for February, 1884, records the fact that a number of these moths hatched under the influence of artificial heat in mid-winter, emerged from the cocoons about 7 P. M. In May and June this would have been the proper hour, for they could have dried their wings by the last rays of the setting sun. In December and January it was much too late and the moths were found to move their positions so as to receive the full rays from the lamp.

FAMILY AGARISTIDÆ.

Alypia octomaculata Fab. June, July.

RECENT LITERATURE RELATING TO STATEN ISLAND.

Dr. Arthur Hollick read the following review:

The Clays of the United States East of the Mississippi River. Heinrich Ries.

Professional Paper No. 11, U. S. Geol. Survey, 4to, pp. 298, pls. 9, figs. 11 in text. Washington, D. C., 1903.

Under the caption "New York" (pp. 170-179) there are several references to the Kreischerville clays, including the following analysis of white fire brick clay, on p. 174:

Si O ₂	47.40
Al ₂ O ₃	39.01
Fe ₂ O ₃.....	.15
Ca O.....	trace
Mg O.....	trace
K ₂ O.....	trace
Na ₂ O.....	trace
H ₂ O.....	14.10

On the same page is also given the following results of a physical test of a similar clay from the same locality:

Amount of water required to work up.....	38 per cent.
Plasticity ...	fair
Tensile strength...11-14 lbs. per sq. in.	
Air shrinkage.....	10 per cent.
Fire shrinkage.....	8.7 per cent.
Viscosity.....	35 +
Color when burned.....	white.

The number representing the measure of viscosity means a fusing point of about 3,326° Far., or 1,830° Cent., showing a very refractory clay,

Mr. A. B. Skinner referred to an illustrated article entitled "*When Red Men Battled on Staten Island*," by Geo. H. Pepper, in the New York Herald of March 6th 1904, in which the Indian burying ground at Tottenville and the work of Mr. Pepper in exploring it are described. The illustrations include figures of some of the most interesting of the relics which were unearthed there, a view of the sandy field adjoining the Cole property, where the excavations were made and a picture of a part of one of the latter, showing the remains of three skeletons in place. The work was done under the auspices of the American Museum of Natural History, where the relics are now preserved. It is a matter for regret that this material is not a part of our own collection from the same locality.

SPECIMENS EXHIBITED.

Mr. Davis exhibited photographs of Staten Island trees, taken by Mr. Romeyn B. Hough.

Mr. Skinner exhibited a series of leaf shaped arrow points from a number of Staten Island localities and a war arrow point found at Horseshoe spring.

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No 6.

APRIL 9th, 1904.

The regular meeting of the Association was held at the residence of Mr. Wm. A. Shortt, Tompkinsville, with the president in the chair.

Mr. Shortt read a paper, illustrated by blackboard sketches and diagrams, on SOME VAGARIES OF VOTERS: A STUDY OF DEFACED AND DEFECTIVE BALLOTS, which will be issued as a special number of the Proceedings.

Mr. Wm. T. Davis read the following memoranda:

I.

WOLFFIA IN THE CLOVE VALLEY.

In these Proceedings for December 9th, 1893, Mr. Thomas Craig reported the discovery on the Island of *Wolffia*, the smallest native flowering plant. The plant remained abundant in the Old Town pond for several years and then disappeared. In the summer of 1903 I found *Wolffia* very plentiful in Clove Lake, associated with *Lemna*. The dyke of this pond was one of the three that broke in the Clove Valley during the great rain of October 8th and 9th, 1903. The pond was completely drained and the brook, that once flowed through the valley, was reestablished. The dam has been rebuilt and it is to be hoped that the tiny *Wolffia* was not all carried away with the water, and that it will regain its former abundance.

II.

TWO OLD BOOKS BY STATEN ISLANDERS.

"The American Grape Growers Guide," written by the late Mr. Wm. Chorlton, one of the early members of this Association, was published in 1856. It is of interest to find that the book is still well thought of, and in their descriptive list of "Rural Books," 1902-3, Orange Judd Co. refer to it as "a practical treatise on the cultivation of the grape vine in the hot-house, cold grapery, etc."

Another old book by a Staten Islander, but which would not be considered very useful to-day, is "The School Geography, by John J. Clute, New York. Published by Samuel Wood & Sons, No. 261 Pearl Street, 1833." In 1877 Mr. Clute issued the "Annals of Staten Island," which has been included in the two histories of our Island published since that date.

RECENT LITERATURE RELATING TO STATEN ISLAND.

The secretary called attention to a copy of the *Proceedings of the First General Convention to Consider the Questions Involved in Mosquito Extermination*, transmitted by Mr. Walter C. Kerr.

This is an octavo volume of 84 pages, excellently illustrated and containing valuable up-to-date information in re-

gard to the life history of mosquitos, their relation to malaria, suggestions for extermination, etc. On pp 16-18 is an article by Mr. Kerr, entitled: "What a Rural Community Can Do," in which is described what was done to mitigate the mosquito nuisance in the vicinity of the Richmond County Country Club in 1898 and what is contemplated to be done in the future.

The convention was held in New York, December 16th, 1903, and the volume bears the imprint of the Brooklyn Eagle Book Printing Dept., 1904.

SPECIMENS EXHIBITED.

Mrs. L. E. Low exhibited a collection of dried ferns from China and Nassau Island, W. I.

Mr. Wm. T. Davis exhibited specimens of moths showing deformities.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. IX, No. 7.

MAY 14th, 1904.

The regular meeting of the Association was held at the residence of Mr. A. C. Knothe, Tompkinsville, with the president in the chair.

Mr. Montague Lessler, Tompkinsville and Mr. Geo. W. Tuttle, New Brighton, were elected to active membership.

Mr. A. B. Skinner exhibited a collection of indian relics, consisting of brass arrow points, fragments of a pewter kettle, lead bullets, gun flint and pieces of clay pipes, and read the following paper:

TRADE ARTICLES USED BY THE STATEN ISLAND INDIANS.

Before coming in contact with the whites the Staten Island indians knew very little of metal of any sort. A few stray pieces of native copper, passing from hand to hand down the coast, or brought here and lost by some invader, may have appeared from time to time, but none have survived to the present day.

Some years ago Mr. George Pepper, when excavating in Burial Ridge at Tottenville, discovered the skeleton of an infant, some of the bones of which were greatly discolored by salts of copper but otherwise no trace of prehistoric metal has been reported.

Upon the advent of the white man, all was changed. Deer skin was laid

aside for "duffels;" the flint blade was exchanged for the steel knife; the stone ax for the tomahawk. The bow was still largely used however, for the sagacious Dutch settlers of New Amsterdam, while they were willing enough to trade the rifle to the Iroquois and other distant indians, did not care to make the savages who lived about their doors masters of the "mysterious iron." The earthen pot was soon seen by the observant savages to be less desirable than the pewter or brass vessels of the Dutch and thus was early discarded. And unfortunately the cheap clay pipe of European manufacture soon took the place of the handsome clay and stone pipes of the aborigines.

Very many presents of European articles of all sorts were made to the indians, and many were received in exchange for parcels of land. Governor Lovelace gave the indians of Staten Island, in 1675, the following articles in exchange for their claims here:

- I. 400 fathoms of wampum
- II 30 match boots
- III. 8 coats of Durens, made up
- IV. 30 shirts
- V. 30 kettles
- VI. 20 gunnes
- VII. firkin of powder
- VIII. 60 barres of lead
- IX. 30 axes

X. 30 hoes

XI. 50 knives.

In spite of this profuse distribution of articles designed for the indian trade, very few objects remain today. In several years collecting the writer has found only two metallic arrow points, several bullets and gun flints, one fragment of a pewter kettle and several broken trade pipes. Only one or two other articles have ever been reported.

Strangest of all no iron-axes have ever been found to my knowledge, although they must have been abundant here in colonial days.

The trade pipe is fairly abundant and may easily be distinguished by the trade marks R. T., or R. Tippet, stamped on the bowl. Metallic arrow points are not frequent.

Mr. Skinner also read the following note on

INDIAN SKELETONS AT MARINERS' HARBOR.

On the 20th of April last, while searching for indian implements on the grounds of the Milliken Bros. foundry, near Dehart's Brook, Mariners' Harbor, I chanced upon a place where the railroad cut had been recently widened. Noticing that oyster shells, fragments of pottery, flint chips, black dirt, etc., were abundant I disturbed the sand with my feet, and to my great surprise dislodged a fragment of a human femur. I immediately began to excavate with my intrenching tool, and soon disclosed a "bone burial" consisting of the bones of five indians, (3 adults and 2 infants.) All were in a terrible condition, being extremely fragmentary. I at first thought that the bones had all been broken by the shovels of the Italian workmen, but further examination convinced me that the skulls at least had been crushed in before burial. No im-

plements save a rude argillite knife and one small pottery fragment were found.

Mr. Wm. T. Davis exhibited herbarium specimens and read the following

BOTANICAL NOTES.

Additions to the Flora.

Rosa canina L. Found originally by Dr. A. A. Tyler in 1897. The bush from which the specimens were gathered was destroyed in widening the Fresh Kill Road near Green Ridge.

Rhamnus cathartica L. This shrub has been cultivated for hedges and has sparingly escaped on our island. It occurs on the bank or terrace near the Narrows, along Rockland Road, on Todt Hill, etc.

Tragopogon pratensis L. A single plant was found on Hamilton Avenue, New Brighton.

Crepis tectorum L. Several plants were found at Arrochar and one at New Brighton.

Nabalus trifoliolatus Cass. Occurs frequently in the wooded portions of the Island.

New Localities.

Polypodium vulgare L. This fern, now nearly exterminated on our island, was found growing on the base of a tree in the woods near Poverty Lane, back of Richmond.

Pogonia verticillata (Willd.) Grows in two localities near Mariners' Harbor. It has been reported from Gifford's and Huguenot.

Salix tristis Ait. Rossville. A single clump.

Ostrya Virginiana (Mill.) This tree has been found in Blood-root Valley and along a brook near Willow Brook hamlet. (See also Proceedings for Nov. and Dec., 1896.)

Betula nigra L. The river birch has been found sparingly over the wooded portions of the island in wet and damp

situations. There is a considerable clump of these birches growing at Watchogue and a few trees were found by me and Mr. Leng near Rossville, last Fall.

Ammodenia peploides (L.) The sea-beach sandwort was reported in the Flora as not common. It seems to have disappeared for a few years from the South Beach. In 1897 a small clump was found. None could be discovered again until 1900, when another clump was found on the shore at Oakwood. No plants have since been observed.

Ranunculus delphinifolius Torr. The yellow water-crowfoot occurs near Luyster Pond, Valley Forge, Westfield.

Crotalaria sagittalis L. A single plant on Richmond Hill. It has been reported from near Silver Lake.

Vicia Cracca L. Tottenville.

Geranium Carolinianum L. This geranium grows at Tottenville and vicinity. A new locality for it is the head of Simonson Avenue, Mariners' Harbor, where there are a few plants.

Linum usitatissimum L. Near Ward's Point, Tottenville. Gardens, New Brighton.

Tilia Americana L. American linden. Upper part of Moravian Brook; two trees. The trees mentioned in these Proceedings for Feb. and Sept., 1891, all grew on the westerly side of the range of hills.

Myriophyllum humile (Raf.) Reported in the Flora from "ponds near New Dorp (Allen in T. C. B.)" A definite locality in Butler's Pond.

Ipomoea hederacea Jacq. The ivy-leaved morning-glory was found in considerable abundance in a cultivated field near the Billopp House, Tottenville, in September, 1902.

Solanum rostratum Dunal. Growing in some abundance in a back yard in Port Richmond. A single plant was

reported from near Four Corners in 1875 by W. H. Rudkin.

Sericocarpus linifolius (L.) Dr. Dowell and I found several clumps of the narrow-leaved white-topped aster growing in a barren field at Richmond Valley. A single plant was reported from Watchogue in these Proceedings for October 14th, 1893.

Inula Helenium L. Elecampane has been found near the Morgan Road, not far from the Fresh Kill bridge, on Karle's Neck. It was originally reported as abundant near Garretsons and New Dorp, but seems to be quite uncommon there now.

Centaurea nigra L. From the Country Club grounds on Todt Hill in 1897. In the same year it was found quite abundant in a field near the Billopp House, Tottenville.

Mr. Davis also exhibited specimens of "flat bugs" and read the following

NOTE ON ARADUS.

The "flat bugs" (Aradidae) are Hemipterous insects fitted to live in the narrowest of crevices. They are usually found in and under the bark and are sometimes mistaken for bed-bugs. Six species of these insects have so far been collected on the island. On April 10th of this year, a species that has been determined for me by Mr. Bueno as *Aradus similis* Say, was found in some numbers at Mariners' Harbor. Some individuals were collected on the fungus *Polyporus betulinus* which occurs so commonly on the white birch. As there is still much to be learned concerning the habits, etc., of these flattest of all bugs, it may be well to record the fact that *similis* was found paired on the date given above.

SPECIMENS EXHIBITED.

Dr. Arthur Hollick presented a fragment of a weathered limestone Drift, boulder, found near Egebrtville, containing fucoid markings; a piece of talcose schist from the same locality, and a stone adze, locality not known, donated by Mrs. A. K. Lauderdale.

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 8.

OCTOBER 15th, 1904

The regular meeting of the Association was held at the residence of Dr. Arthur Hollick, with the president in the chair.

The following were elected to active membership:

Oliver D. Clark, James P. Chapin, Edwin Stumpp, New Brighton, and Orrin L. Brodie, Port Richmond.

Dr. Arthur Hollick exhibited specimens and read the following

GEOLOGICAL NOTES.

A submerged peat bed. During the past Summer Mr. C. S. Egbert, of Port Richmond sent me specimens of peat and silt, with the following memorandum and a map:

"The specimen of peat was dredged from a bed of the material encountered during the work of the United States Government in straightening and deepening the channel of the Kills, at a point just west of Long Dock, Mariner's Harbor. It was at a depth of about 12 feet below mean low water and was found to be about 4 feet in thickness, with about 8 feet of silt overlying it. No hard rock was encountered in this vicinity."

This specimen of peat is similar to that which is in process of formation in connection with our salt marshes at the present time, at tide level, and its position at such a depth, with eight

feet of sediment covering it, gives us an excellent example of the extent of the subsidence which has taken place there in recent geologic time. The silt is very fine, grayish in color, and in drying has hardened into a firm, compact mass.

A large fossil coral. A recent search in the Yellow Gravel included in the moraine at Prince's Bay bluff brought to light several pebbles containing the characteristic silicified fossils, of which one consists of the largest piece of coral thus far found on the Island. It is a notable addition to our already excellent collection of these interesting fossils.

Dr. Hollick also exhibited specimens and read the following

BOTANICAL NOTES.

Thymus Serpyllum L. Wild Thyme. A small patch of this plant, which seems to be spreading, grows on the Fox Hills golf links. The situation is such as to favor its preservation and there is reason to hope that it may become the nucleus for more extended local distribution. The only previous record of the occurrence of the species on the Island was based on a small patch found in 1879 on the side of Richmond Turnpike, near Silver Lake, although Mr. Samuel Henshaw also re-

ported it as growing in New Brighton, on Hamilton Avenue. It has long since disappeared from these localities and its reappearance in such an apparently isolated location is both interesting and encouraging.

Antennaria neglecta Greene, and *A. plantaginifolia* (L.) Richards. These two species of Everlasting Flower, which we formerly included in one species, under the latter name, are about equally common on the Island, as may be readily ascertained by examining a number of patches of the plants in different places. I was interested to note that in my herbarium are specimens of both species, collected many years ago and mounted on separate sheets on account of the manifest difference between them, but without recognition that they were specifically distinct. Another species is thus added to our local flora.

Mr Wm. T. Davis exhibited a living specimen and read the following

NOTE ON *HYLA ANDERSONI* BAIRD.

This specimen of the rare tree toad, *Hyla Andersoni* Baird, was collected on Sept. 5th at Lakehurst, N. J. In "The Batrachia of North America," published in 1889, where a colored plate of the species may be found, Prof. Cope writes: "This beautiful species is of much rarity, but two specimens having thus far come under the eyes of naturalists. The longest known is the type from Anderson, S. C., which is represented in Plate 84; the second specimen was found by Prof. Leidy, of Philadelphia, at Jackson, N. J., and was the subject of the description of coloration in life, given above."

Since the above was written several additional specimens have been recorded; namely, from May's Landing and Pleasant Mills, both in Atlantic Co.,

N. J. Jackson, where Prof. Leidy found his specimen in 1863, is in Camden Co. Lakehurst is the most northern locality from which the species has been reported.

RECENT LITERATURE RELATING TO
STATEN ISLAND.

I. *Geology of the City of New York (Greater New York) with Geologic Map, 2nd Edition.* L. P. Gratacap. 8 vo., cloth, pp. 119, pls. 2, map and 35 figs. in text. New York, 1904. The Irving Press, 225 4th Ave.

This brochure is designed, according to the title page, "for use in schools, institutes and classes," but it may be read with interest and profit by anyone who may wish to learn, in a general way, what is known in regard to the geology, topography and mineralogy of the region. It is written in popular language and in addition to what is indicated in the title there are included many quaint bits of local history and a fairly complete bibliography. Staten Island receives special treatment on pp. 86-94, and our Island necessarily comes in for a full measure of attention in the discussion of the evidences of glaciation. This portion of the work is a reprint of the separate paper published by the author in 1898 and reviewed in our Proceedings of Oct. 8th of that year. "Sugar-loaf rock" in the Irving property, Grymes' Hill, and the bluff at Prince's Bay, are subjects of illustration.

For the instructor, and the busy person who may not have the time to hunt up and become familiar with the many scattered sources of information on the subject, this will prove to be a welcome volume. It contains an excellent resume of most of the important facts which should be known, as well as

clearly written and impartial discussions of theories. It is a matter for regret that the illustrations are not up to the standard of the text.

II. *An Undescribed Species of Alnus*. N. L. Britton. *Torreyia*, Vol. iv (Aug. 1904) p 124. A description of a new species of Alder, based upon a specimen collected at Grant City, Staten Island, which was at first thought to represent *Alnus incana* (L.) Willd., and was so listed in Appendix No. 7 to the Flora of Richmond County, in 1895. It may also be found mentioned in our Proceedings for Jan. 12th, 1895, under the above name. Dr. Britton now describes it as a new species, to which he gives the name *Alnus Noveboracensis*. This will therefore have to replace *A.*

incana in our local list. The type specimen is in the herbarium of the New York Botanical Garden.

SPECIMENS EXHIBITED.

Mr. Wm. T. Davis exhibited shoots of locust trees, collected near Great Kills, barked by rabbits. This was considered as an indication of how the animals were hard pressed for food during the past severe winter.

Dr. Arthur Hollick exhibited specimens of Drift boulders containing fossils, collected at Giffords and Tottenville; Cretaceous leaf impressions in ferruginous shale, from Tottenville; sandstone impregnated with copper, from the Princes Bay bluff and two arrow points found on the Fox Hills golf links.

PROCEEDINGS
OF
THE NATURAL SCIENCE ASSOCIATION
OF STATEN ISLAND.

VOL. IX, No 9.

NOVEMBER 12th, 1904.

The Twenty-fourth Annual Meeting of the Association was held at the Staten Island Academy.

In the absence of the president Mr. Fred. F. Hunt was elected chairman *pro tem*.

Reports of officers for the past year were read and approved as follows:

Secretary:

Number of members on roll at date of last annual meeting,.....	106
Since elected.....	15
Resigned.....	6
Dropped from the roll ..	3
Deceased....	1

Leaving at date, including 1 life member and 2 honorary members....	111
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Treasurer:

Balance on hand at date of last annual meeting.....	\$320.37
Received from membership dues	234.00
Received from sales of and subscriptions to Proceedings.....	20.50
In interest on deposit in savings bank	16.30
Balance & income	\$591.17

Disbursements:

Printing and stationery	\$151.30
Postage and expressage	18.82
Insurance.....	17.50
Library supplies.....	12.75

Subscriptions to periodicals	5.00
Janitor.....	5.00

Total disbursements \$210.37

Balance in hand \$380.80

Curator:

Additions to the museum:

Number of separate donations...	12
Number of specimens included in above.....	38
Classified as:	
Geology.....	28
Botany.....	6
Archaeology.....	4

Additions to the library:

Number of bound volumes, parts of volumes and pamphlets recd.	314
Classified as follows:	
By exchange.....	251
Donated.....	53
By subscription.....	10

Forty-one volumes now in the hands of the binder, will, when returned, make a total of 602 bound volumes in the library.

The executive committee, through the the secretary, submitted a preliminary report of progress in regard to what had been done, and an outline of what was under consideration, in connection with the possible future expansion of the Association and plans for new quarters.

On motion the report was approved and ordered placed on file and the committee was instructed to proceed along the general lines indicated in the report.

The following were elected to active membership:

E. E. Valentini, Tompkinsville.

Stafford C. Edwards, New Brighton.

W. F. Keeney, West New Brighton.

The election of officers for the ensuing year resulted in the re-election of the present incumbents, as follows:

President, Howard R. Bayne.

Secretary, Arthur Hollick.

Treasurer, J. Blake Hillyer.

Curator, C. A. Ingalls.

Trustee, Wm. T. Davis.

On motion, it was *Resolved*: that the regular meetings of the Association during the ensuing year be held on the third Saturday evening of each month except June, July, August and September.

The annual address of the president, Mr. Howard R. Bayne, was read by the secretary, as follows:

ANNUAL ADDRESS OF THE PRESIDENT.

It is recognized as appropriate to lay before the annual meeting of the Association a brief report on the part of its president.

Since the last annual meeting we passed through one of the most inclement winters within the memory of the present generation. Continuous cold weather was accompanied by frequent storms sharp and severe. It was frequently said by our neighbors that we were having an old fashioned winter. A good deal of suffering resulted, and traveling about the Island, especially during the night time, was difficult, sometimes impracticable, and frequently inconvenient. In spite, however, of these impediments, the meetings of the Association were marked by a full at-

tendance, and an intelligent interest in its proceedings.

We have been entertained and instructed by a number of able and valuable papers, and by the presentation of many interesting specimens from the mineral, vegetable and animal kingdoms. We owe a debt of gratitude which we cannot easily pay, to our fellow members who have contributed so much to our pleasure and who have both entertained and instructed us at the expense of time, patience and capacity on their parts.

To Dr. Arthur Hollick, we are indebted for many interesting geological specimens which he has added to our museum, and to several papers on geological subjects which will increase in value as time goes on. Mr. William T. Davis has contributed a number of papers, descriptive of the specimens of vegetable and animal life, which he has exhibited at our meetings, all of which have been characterized by his usual accuracy of statement and careful research. Interesting botanical specimens have been submitted from time to time by Dr. Philip Dowell, and relics of Indian handiwork by Mr. Alanson B. Skinner, who has also contributed several papers on the subject of the Staten Island Indians, which show careful study and research unusual in one of his years. We are also indebted to Mr. William Allaire Shortt for a paper entitled "The Vagaries of Voting: A Study of Defaced and Defective Ballots." This paper was illustrated by black-board sketches and diagrams, and was especially interesting to many of us who take interest in public affairs. This paper we hope to publish in full, with illustrations, in the near future, as a special number of the Proceedings. Mr. Edward C. Delavan has added to our historical information by his paper entitled "The Dispute Between the Proprietors of East New Jersey and the Duke of York. Concerning the Title to

"Staten Island" which we also hope to publish under the same conditions as the paper previously mentioned. Mr. Delavan's researches into the Colonial history of Staten Island have been painstaking and accurate in the extreme, and any paper from him may be relied upon by the historian of the future. Other members have contributed to our entertainment during the year, by the exhibition of specimens and interesting discussions, among whom I may specially mention Messrs. L. W. Freeman and John T. Fetherston.

This report would be incomplete without mentioning the movement in the direction of securing permanent and adequate quarters for the museum of the Association, where we propose that our collection may be displayed for the instruction and entertainment of the public, and where accommodations may be had for public, special and such other meetings as we may wish to hold.

This subject has received consideration for a long time, but necessarily progress on practical lines has been delayed on account of the numerous other more pressing calls upon the people in their municipal as well as in their individual capacity. We have, since the consolidation of our community with the greater City, been passing through a period of development and construction, along lines requiring the expenditure of much money and effort to secure those conveniences of transportation and other public utilities which are necessary in the pursuit of our daily avocations. Concessions from the municipal authorities in excess of those necessary demands have seemed impracticable, so long as we are still without those conveniences and necessities which are essential to our comfort and safety in the daily walks of life. To be too insistent and pressing would perhaps defeat the very object we have in view, but the time is ap-

proaching when we may safely undertake to bring the requirements of our Association and the possibilities of its resources in the direction of public instruction and entertainment, to the attention not only of the authorities, but also to our fellow citizens of Staten Island. This matter, however, is in the hands of a committee of the Association, from whom a report may be expected to-night.

The social features of our meetings have been most agreeable and satisfactory, and I am sure that I record the feeling of the Association as a whole, when I express the appreciation of the members to those of our number who have entertained us at their homes, during the past year.

In review of the year, I think we may congratulate ourselves that it has been a most profitable and pleasant one to us all, and that our Association has held its own in the esteem of the community and in the respect and good will of the outside world. The reports of the respective officers of the Association will inform you more particularly in regard to the details of its affairs.

In conclusion, I wish to express to the Association my appreciation of the courtesy and the kindness with which I have been uniformly treated by the members, as its presiding officer.

Dr. Arthur Hollick exhibited specimens of amber and fossil leaves, from the Kreischerville clays and read the following paper:

A RECENT DISCOVERY OF AMBER AND
OTHER FOSSIL PLANT REMAINS AT
KREISCHERVILLE.

In the published Proceedings of our meeting of December 12th, 1885, may be found a short paragraph by the writer to the effect that fossil plant remains were found on November 15th of that year in the Cretaceous clays of Kreischerville. This discovery was described more at length in the Proceedings of

February 13th, 1886, where the following paragraph may be found included: "There are also little masses of a yellow substance here and there, which I take to be a fossil gum or amber." These were only about the size of pin heads, but the few that were found were carefully preserved.

Again, at our meeting of March 12th, 1882, Mr. Wm. T. Davis exhibited specimens of amber and lignite from Kreischerville and a further discovery of fossil plants at the original locality was noted by me.

Since our last meeting another deposit of fossil leaves, lignite and amber has been uncovered, in the Androvetta clay pit and a large amount of material has been brought to light. The leaves will be subjected to critical study and description later on. It is the amber to which I wish to call special attention tonight.

It was found associated with fragments of lignite, charred wood, leaves and vegetable debris of all kinds and masses of pyrite, in a somewhat lenticular shaped bed of limited extent, which, where exposed, showed a maximum thickness of about 3 feet and a lateral extent of about 18 feet. Only a small amount of the matrix was excavated and subjected to examination, but a relatively large amount of amber was obtained. Some of this is in the form of small drops or "tears", but the bulk of it is in irregularly shaped fragments or masses, varying in size from a large pin's head to a hickory nut. In color it varies from opaque grayish white to transparent yellow or red. The best specimen is clear yellow and is the largest in size.

Further search would without doubt yield further and probably more valuable and interesting results and as much time as possible will be devoted to it before the weather becomes too cold for field work.

Mr. Wm. T. Davis exhibited specimens and read the following paper on

THE RIPENING OF THE FRUIT OF CHOKEBERRIES.

The Purple-fruited Chokeberry, *Aronia atropurpurea* Britton, was originally described by Dr. N. L. Britton, on p. 517 of his "Manual of the Flora of the

Northern States and Canada," in 1903, from specimens found at Arlington, Staten Island. The type specimen is in the herbarium of the New York Botanical Garden.

In September and later in the Fall, bushes of *Aronia atropurpurea* resemble considerably those of *Aronia arbutifolia* (L.) Medic., except in the color of the fruit, but earlier in the season the differences between the two species is more marked. Both species grow together at Arlington and Mariners' Harbor, and if the bushes are examined during early August it may be found that while the berries of *atropurpurea* have already turned purple, those of *arbutifolia* are far from ripe. The berries of the last named species do not attain their bright red color until the latter part of the month. Dr. Britton informs me that this difference in the time of the ripening of the fruit of these chokeberries has lately been observed in specimens under cultivation in the N. Y. Botanical Garden.

Associated with the above mentioned two species is a third form, with black fruit, which shrivel earlier in the Fall than either the berries of *atropurpurea* or *arbutifolia*. It is presumably *Aronia nigra* (Willd.) Britton, from the glabrous pedicels and nearly glabrous leaves, but its fruit, though shriveled, persists for a long time and cannot be said to be "early deciduous."

During the first part of November, all of the three forms may be identified at Arlington by aid of their mature fruit and few remaining leaves. *Aronia atropurpurea* has not been heretofore listed as an addition to our local flora.

SPECIMENS EXHIBITED.

Mr. Davis exhibited specimens of *Antennaria neodioica* Greene, as an addition to our local flora, and specimens *A. neglecta* Greene and *A. plantaginifolia* (L.) Richards, for purposes of comparison.

Mr. Davis also exhibited a large piece of vari-colored jasperoid agate, found as a constituent of the Drift, near Rossville.

Dr. Hollick exhibited a large mass of silicified coral, weighing about 4 lbs., from the Yellow Gravel formation near Matawan, N. J., and compared it with a similar smaller piece from the Prince's Bay bluff, shown at the previous meeting.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION

OF STATEN ISLAND.

VOL. IX, No. 10.

DECEMBER 17th, 1904.

The regular meeting of the Association was held at the residence of Mr. Alanson Skinner, with the president in the chair.

The executive committee made a further report of progress along the lines suggested in its last report, relating to the possibility of obtaining new quarters through co-operation with the Municipal government.

On motion the report was approved and the committee was authorized to prepare an enabling act for submission to the Mayor, and if approved, to have it introduced in the State Legislature.

The following were elected to active membership:

Willard A. Boyd, New Brighton;
Rupert H. Hopkins, Port Richmond.

Dr. Arthur Hollick exhibited a large mass of fine fibrous roots and read the following note:

A REMARKABLE SEWER OBSTRUCTION.

This remarkable mass of closely interwoven, fine rootlets, was transmitted by our fellow member, Commissioner of Public Works, Louis L. Tribus. It represents a portion of a growth which was removed from a sewer pipe, as explained in this letter accompanying it:

"Louis L. Tribus, Esq.,

Commissioner of Public Works,
New Brighton, N. Y.

Sir:

On Sunday, September 25th, 1904, a

stoppage in the eight inch sewer on Wood Avenue, near Amboy Road, Totenville, was reported to me. Men were immediately sent to relieve same, which they accomplished after working late into the night

The cause of this stoppage I found to be elm tree root fibre, which had entered into sections of the vitrified pipe, thereby closing it entirely.

Believing that a specimen of this remarkable growth would be of interest to the Natural Science Association I had a portion of it thoroughly cleaned and beg to turn the same over to you for presentation.

Very respectfully,

E. H. Seehusen,

Supt. of Sewers."

A similar mass of fine willow roots was removed from the sewer in Wall Street, New Brighton, some years ago.

Mr. Wm. T. Davis exhibited specimens of the fruit and seed of the Black Haw or Nannyberry and read the following note:

VARIATION IN THE FRUIT OF THE BLACK HAW.

An examination of the fruit of our common Black Haw, or Nannyberry, (*Viburnum prunifolium* L.), shows that there is considerable variation in its shape. The flat stone in some instances is 10 mm. long by 7 mm wide; in

other specimens the stone is almost circular, being about 7 mm. in diameter. Specimens gathered in the Clove Valley and here exhibited, show these different forms. In *Viburnum Lentago* L. this tendency of the stone to vary in form from circular to oval, has been recorded and it would naturally be expected to be the same in the closely allied *V. prunifolium*.

MINOR NOTES.

Mr. James Chapin exhibited a mounted specimen of an English Starling, from New Brighton, with a malformation of the bill, due to crossing and elongation of the mandibles.

Mr. Ira. K. Morris presented a copy of an old poster, printed in 1846, entitled "An Address to the Independent Electors of Richmond County," in relation to the election of delegates to the State Constitutional Convention.

The secretary read the following notes on

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. In the *New York Herald* of Sunday, November 20th, may be found an illustrated article entitled "Romance of the Golden Rectory of Staten Island." It refers to St. Andrew's church at Richmond and the illustrations include pictures of the church and vicinity; the

rectory, and a portrait of the late Rev. Thomas S. Yocum.

II. Mr. Cornelius G. Kolff has recently issued a neat little eight page pamphlet, with numerous well selected illustrations, under the title "Emerson Hill, Concord, Staten Island." It is designed to advertise the advantages and attractions of the property formerly owned and occupied by William Emerson, when he was County Judge, more than half a century ago. The development of real estate, as a rule is destructive of old associations and traditions, so it is pleasing to see that this property, although apparently fated soon to be divided into separate parcels, has fallen into the hands of those who appreciate its history and who design to perpetuate, as far as possible, the original features and names which were associated with it. In a short historical sketch, which constitutes the opening chapter, the visits of Ralph Waldo Emerson and Henry D. Thoreau are mentioned and their influence, which resulted in giving the name of Concord to the nearby settlement.

At the close of the meeting Mr. Skinner exhibited his collection of Indian implements which embraces a great many interesting objects from the Island.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 11.

JANUARY 21st, 1905.

The regular meeting of the Association was held at the residence of Mr. Montague Lessler, Tompkinsville, with the president in the chair.

The executive committee reported further progress in the matter of co-operation with the City and advised that a law committee be appointed to consider and report upon any changes that might be necessary or advisable in the Certificate of Incorporation of the Association or in the Constitution and By-Laws.

On motion the chairman was authorized to appoint such a committee, to consist of himself and three other members. The chairman subsequently appointed Mr. Wm. A. Shortt, Mr. Montague Lessler and Mr. E. C. Delavan.

On motion the chairman was also authorized to appoint a committee to consider and report upon suggestions for a change in the name of the Association. The chairman appointed Mr. Wm. H. Mitchell, Mr. Wm. T. Davis and Dr. Arthur Hollick.

On motion the secretary was instructed to issue notices for a special meeting of the members of the Association, to elect a board of five trustees and to act upon any other matters that might arise in connection with the reports of the above mentioned committees.

Dr. Arthur Hollick exhibited specimens of amber from the Androvette clay pit at Kreischerville, together with photographs of the locality and of the section exposed in the pit, and read the following:

ADDITIONAL NOTES ON THE OCCURRENCE OF AMBER AT KREISCHERVILLE.

Since the publication of my preliminary paper on the discovery of amber at Kreischerville, in our Proceedings for November 12th, 1904, it was found that considerable interest had been aroused in the subject, which led to the preparation of a paper entitled "The Occurrence and Origin of Amber in the Eastern United States." This paper was read at the Philadelphia meeting of the Botanical Society of America, on December 30th, and will be published in a forthcoming number of the *American Naturalist*.

An exhaustive examination of the literature concerning amber showed very few records of the occurrence of of the material in this region. Cape Sable, Md., Gloucester, Co. N. J., and Gay Head, Martha's Vineyard, were apparently the only localities mentioned where it had been found in place, although there is one rather indefinite reference to a large piece which was

said to have been "found on the shore of Raritan Bay, and now deposited in the Museum at Berlin, Germany." (*Trans. N. Y. Acad. Sci.* ii (1883) 86)

Of special interest is the problem of the origin of amber. At the Cape Sable locality it was found in connection with a log of lignite, identified as the wood of an extinct species of *Sequoia*, the genus to which the giant trees of California belong, and it is interesting to note that at Kreischerville it occurs associated with leaves and twigs of *Sequoia heterophylla* Vel. and *S. Reichembachi* (Gein.) Heer. We are not in a position to say whether trees of this genus were the source of supply for our material, but it is fair to assume that they contributed to it. Other coniferous remains found in the same bed were identified as *Juniperus hypnoides* Heer, *Widdringtonites Reichii* (Etts.) Heer, cone scales of *Dammara*, the genus to which the "Kauri" gum tree of Australia belongs, and leaves of a species of *Pinus*.

Another exceedingly interesting phenomenon is the occurrence of charred wood, evidently the result of a forest fire at or prior to the time when the deposits containing the amber were laid down. This charred wood is entirely different from the lignite associated with it and was evidently produced by the direct effect of fire and not by any chemical action such as that which changed part of the wood into lignite. As man was not in existence at that period in the Earth's history the origin of the fire must have been due to some natural agency and as there is no indication of any volcanic disturbances we may assume, "in the absence of any more likely theory, that it was due to lightning.

Mr. Wm. T. Davis exhibited a number of hair and bone pellets, ejected by an owl, together with a specimen of the beetle *Trox erinaceus* Le C., found feed-

ing on them. Other species of the genus *Trox* were also exhibited and Mr. Davis read the following paper on
OWL PELLETS AS FOOD FOR BEETLES.

On the 16th of April, 1904, I visited the grove of cedars on the southerly side of the Fresh Kill road near Gifford's Lane. Under one of the trees I found twenty-three pellets of hair and bones of mice, thrown up by an owl that had frequented the tree for a considerable period. In some of the pellets the upper and lower jaws of the mice, with their teeth complete, were well preserved. The owl was not at home at the time of any visit, and the species was not ascertained.

Owls capture their prey with their talons; the smaller animals are swallowed whole and the bones and hair, in matted pellets, are later ejected at the mouth.

Looking over the pellets that had been thrown away by the owl in the cedar it occurred to me to make search for a *Trox*, which beetle would find in the dry hair and bones just the food to its liking. As a result of the search the little *Trox erinaceus* LeC., here exhibited, was discovered. It has been identified for me by Mr. Schaeffer of the Brooklyn Institute.

At the meeting of the New York Entomological Society, held May 19th, 1903, Rev. J. L. Zabriskie exhibited the snipped off butt ends of horse hairs that he had taken from the stomach of *Trox unistriatus*, collected some years before, about a dead horse. He called attention to the fact that all of the hairs, which he exhibited under the microscope, were nipped off in the same oblique manner.

The different species of *Trox*, of which we have so far found eight on the Island, are amongst the last insects to leave a dead animal. When the other scavenger beetles have departed from a dead mouse or bird for instance, these beetles attend and find a living. This exhibit thus well illustrates one of those economies of Nature; what was useless to the owl and to nearly every other animal, was highly desirable to the little *Trox erinaceus*.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 12.

FEBRUARY 18th, 1905.

The regular meeting of the Association was held at the residence of Mr. Howard R. Bayne, with the president in the chair.

The president declared the special order of business to be the election of five trustees, in accordance with the following notice:

To the Members of the Natural Science Association of Staten Island:

Notice is hereby given that an election of trustees for the Natural Science Association of Staten Island not having been held at the last annual meeting, and the trustees not having within one month thereafter called a special election, a meeting of the members of the said Natural Science Association of Staten Island for the purpose of electing trustees thereof, will be held at No. 39 St. Mark's Place, New Brighton, in the County of Richmond, State of New York, on the 18th day of February, 1905, at eight o'clock P. M.

Dated January 23d, 1905.

ARTHUR HOLLICK,
Secretary.

The following nominations were made for trustees and there being no others the secretary was instructed to cast one affirmative ballot for the nominees. The secretary cast the ballot as

instructed and they were declared elected, viz:

Howard R. Bayne, Arthur Hollick, J. Blake Hillyer, Charles A. Ingalls and William T. Davis.

The Executive Committee made a further report of progress, consisting of correspondence between the committee and Borough President Cromwell, in regard to the possibility of obtaining accomodation for the Association in the new Borough hall, and the Committee on Incorporation reported that a new and broader charter for the Association was advisable, similar to one of those obtained by the Brooklyn Institute, American Museum of Natural History, New York Botanical Garden and other semi-public institutions, in order that the Association might enter into and maintain satisfactory relations with the municipal authorities.

The reports were accepted, discussed and approved and the Committee on Incorporation was requested to prepare a draft of a proposed new charter, as outlined in the report of the Committee, and to submit the same for discussion at a special meeting of the Association to be called for that purpose.

The Committee on Change of Name reported in favor of either "The Scientific and Historical Association of

Staten Island" or "The Staten Island Association of Arts and Sciences."

The report was accepted and discussed and the latter name was approved and adopted as the name to be incorporated in the proposed new charter.

Mr. Wm. T. Davis exhibited mounted specimens of scrub oak and black-jack oak and their supposed hybrid, (*Quercus Brittoni* Davis) and read the following paper:

A NEW STATION FOR THE HYBRID OAK,
QUERCUS BRITTONI DAVIS.

In these Proceedings for September, 1892, an oak supposed to be a hybrid between the scrub oak (*Quercus nana* (Marsh.) Sarg.) and the black-jack oak (*Quercus Marylandica* Muench.) was described under the name of *Quercus Brittoni*. The trees from which the specimens were gathered grew at Watchogue, but were destroyed by fire a few years after their discovery.

During the past summer I was fortunate in finding an example of what appears to be this same hybrid growing near Lower Jamesburg, Middlesex Co., N. J., near the side of the road leading to Matchaponix. The tree is about fifteen feet high, has a single trunk with smooth bark and lighter colored foliage than the black-jack oak. In viewing the tree its mixed character is quite obvious, and upon a nearer approach the leaves are found to be rusty pubescent beneath, the pubescence being more generally spread over the surface than in *Marylandica*, though not so close as the white down in *nana*. Both the scrub oak and the black-jack oak grow at the Jamesburg locality, and near the tree described.

Mr. Jas. Chapin exhibited a mounted specimen of snow bunting (*Plectrophenax nivalis* Linn.) shot near Four Corners, and read the following memorandum:

SNOW BUNTINGS ON STATEN ISLAND.

The snow bunting, while common in winter farther north than Staten Island,

rarely comes here, except in very cold weather. They were seen by Dr. Hollick on Fort Hill in the winter of 1872-3 and by Mr. Wm. T. Davis on February 26th, 1892, at Todt Hill, and on Carey Avenue, West New Brighton, on February 22d, 1902.

On December 31st, 1904, I saw a flock of about twenty, near the beach at New Dorp. They flew over the salt marsh and lit on the sand. When they were running around in the weeds they allowed me to approach quite near, but when the nearest bird became frightened he flew up whistling and the others rose in a body. On January 14th there was a similar flock in the same place. On February 11th I saw a flock of about thirty flying over the salt marsh at New Dorp.

On February 13th I went to Castleton Corners. In a field behind Eckstein's brewery there was a flock of about seventy-five. They were eating the seeds of a weed and the waste grain from the brewery. These birds were shyer than those at New Dorp. When frightened they would all rise together, fly around overhead twittering, and then alight in another part of the field. I saw one sitting on the side of a stack of corn-stalks. I was told by a man working in the field that they came there once last winter. Doubtless their unusually large number this winter is caused by the cold weather and heavy snow-fall.

SPECIMENS EXHIBITED.

Mr. Davis exhibited under the microscope specimens of biting lice (*Nirmus thoracicus* Packard) found on the snow bunting exhibited by Mr. Chapin.

After the adjournment of the meeting the newly elected trustees met and organized by electing Howard R. Bayne, president; Arthur Hollick, secretary; J. Blake Hillyer, treasurer; and Charles A. Ingalls, curator.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 13.

MARCH 18th, 1905.

The regular meeting of the Association was held at the residence of Mr. Wm. A. Shortt, with the president in the chair.

The minutes of the special meeting of March 16th, of which the following is an abstract, were read and approved, viz:

The president called the meeting to order and declared the special business to be to act upon the report of the Committee on Incorporation.

Mr. Montague Lessler gave a verbal report of the work of the committee and submitted a draft of the proposed act of incorporation of The Staten Island Association of Arts and Sciences, printed copies of which had been mailed to each member with the notice of the meeting.

Voted: that the report of the Committee be accepted and that the proposed act of incorporation submitted by the committee be approved as a whole and adopted, subject to such changes or substitutions in the names of the incorporators as might be found necessary.

Certain changes having been made in accordance with the above it was

Voted: that the committee be requested to have the act, as amended, introduced in the State Legislature, at the earliest possible date and to take such action as it might deem advisable to insure or assist its passage.

After the reading of the above minutes the committee reported that arrangements had been made to have the

proposed act of incorporation introduced in the State Senate and Assembly on March 20th.

The following were elected to active membership:

John Rader, New Brighton

Guillermo F. Ulink, Tompkinsville.

Chas. E. Trout, West New Brighton.

Thos. D. Rambaut, West New Brighton.

Mr. Alanson Skinner exhibited specimens and read the following paper on

FOOD MATERIALS USED BY THE STATEN ISLAND INDIANS.

When the Raritan-Delaware Indians held Staten Island and the surrounding shores, game, fish and shell fish of all kinds were more or less abundant, and many forms of our fauna, now extinct, were then in existence here.

Traces of many of these creatures, together with some of the less perishable vegetable products of the aboriginal fields, are still to be found, more or less well preserved, in the old fire-pits and graves, where they were hidden or cast aside so long ago. The following is an incomplete list of remains of the animal and vegetable food materials that have thus far been noted during our investigations. Thanks are due to Mr. Wm. T. Davis for assistance in identifications.

Mammals.

Virginia deer (<i>Odocoileus Americanus</i>)	Very abundant.
Raccoon (<i>Procyon lotor</i>)	Not common.
Wildcat (<i>Lynx rufus</i>)	Common locally.
Muskrat (<i>Fiber zibethicus</i>)	Fairly common.
Beaver (<i>Castor Canadensis</i>)	Frequent.
Rabbit (<i>Lepus Floridanus mallurus</i>)	Common.
Domestic dog (<i>Canis vulgaris</i>)	Common.
Timber wolf (<i>Canis occidentalis</i>)	Common.
Red fox (<i>Vulpes fulvus</i>)	Common locally.

Without doubt the black bear (*Ursus Americanus*) was a frequent article of aboriginal diet hereabouts, but so far no remains have come to our notice. This may perhaps be accounted for by the fact that many Indians of the Algonkin stock (to which our "Amerinds" belonged) held superstitious views about the bear, and in some localities they preserved or destroyed the bones of those they took in order that they might not give warning to the surviving members of their species.

Reptiles, Fishes and Crustaceans.

Box tortoise (<i>Terrapene Carolina</i>)	Common
Diamond-back Terrapin (<i>Malaclemmys centrata</i>)	Common.
Snapping tortoise (<i>Chelydra serpentina</i>)	Common.
Sting ray (<i>Dasyatis centrurus</i>)	Rare.
Sturgeon (<i>Acipenser sturio</i>)	Common locally.
Common lobster (<i>Homarus Americanus</i>)	Rare.
Blue crab (<i>Callinectes sapidus</i>)	Rare.

Bones of other fishes and reptiles in abundance, unidentified.

Shell-fish.

Oyster (<i>Ostrea Virginica</i>)	Very abundant everywhere.
Pear conch (<i>Fulgur carica</i> and <i>F. cancellata</i>)	Very abundant everywhere.
Hard clam (<i>Venus mercenaria</i>)	Common locally.
Soft clam (<i>Mya arenaria</i>)	Common locally.
Scallop (<i>Pecten irradians</i>)	Common locally.
Mussel (<i>Mytilus edulis</i>)	Common locally.
Natica (<i>Polynices heros</i> & <i>P. duplicata</i>)	Common locally.

Sea snails and "Fairy's Boats" are not common. They were probably present by accident only, having been brought in with clams and oysters, and were not an article of diet. In the spring of 1901, while excavating in the shell-pits at Old Place, in company with Mr. Wm. T. Davis, we had the good fortune to collect a great number of the shells of land snails (*Helix alternata* and *Helix thyroides*), but at the time we doubted their use as food. More recent discoveries have, however, proved the case. While exploring an ancient village site of the Shinnecock Indians at Shinnecock Hills, Long Island, in the summer of 1902, for the American Museum of Natural History, we discovered a large deposit of the shells of both species of snails under such conditions as to render further doubt impossible.

Birds.

Wild turkey (<i>Meleagris gallopavo</i>)	Abundant.
Vegetable substances being far more perishable than animal remains, correspondingly little of this nature is left. The following however have been collected.	
Indian corn (<i>Zea mays</i>)	Common locally.
Hickory nuts (<i>Hicoria</i> sp.)	Rare locally.

The Indian corn we have found differs in many ways from the modern variety. The cobs were very much shorter and more pointed and contained fewer and larger kernels. Strange to say it is not common, and only local. When any is found, however, it is usually in a good state of preservation.

Mr. Wm. T. Davis exhibited specimens of the small shrew mouse (*Blarina parva* Say) and read the following paper:

AN ADDITION TO THE LIST OF NEW YORK
STATE MAMMALS.

The N. Y. State Museum published in 1904 a "Key to the Land Mammals of Northeastern North America," by Gerrit S. Miller Jr. In that paper occurs the following note on the small shrew (*Blarina parva* Say): "The small *Blarina* is common in meadows and old fields throughout the upper austral and lower austral zones in the eastern United States. Its range therefore extends north about to the southern border of New York." The species was, however, not included in Mr. Miller's "Preliminary List of New York Mammals," published in 1899, for at that time he had no knowledge of its having been taken within the limits of the State.

In De Kay's work on the Mammals of New York, published in 1842, he says that he has not had an opportunity of examining the species but thinks it ought to occur within the State. In 1842 the information concerning some of our mammals and their distribution was much less perfect than it is to-day, and De Kay for example mentions several shrews under different names that are now considered but one species.

In this instance, however, De Kay's supposition that the small *Blarina* would be found in our state was well founded, for we are able to exhibit two specimens collected on Staten Island.

The first of these was found by the writer on the sandy part of Long Neck (Linoleumville), where, with Mr. Alanson Skinner we had gone to look for Indian implements, on the 13th of March, 1904. It was dead, and had probably been captured by an owl, or some other creature and then abandoned. Several mice and shrews have been found dead on our Island that were torn and mutilated by their captors and then left on the top of some boulder, or on the ground.

For the facts concerning the second specimen I am indebted to Dr. Philip Dowell, who informs me that the shrew was found by one of his pupils, Mr. Louis G. Woehrlé, in the cellar of his home, 329 Lexington Ave., Linoleumville, February 25th, 1905. Mr. Woehrlé says the shrew ran out of the wood pile. The fact that both these specimens came from Linoleumville is interesting.

In order to make sure that the identification of the species was correct, the specimen collected in March, 1904, was submitted to and identified by Dr. J. A. Allen of the American Museum of Natural History.

In the "Preliminary List of the Mammalia of Staten Island," printed in our Proceedings for August, 1885, the only shrew mentioned is *Blarina brevicauda* Say.

Dr. Philip Dowell exhibited specimens and read the following memorandum on

ADDITIONS TO THE FLORA OF STATEN
ISLAND.

Micrampelis lobata (Michx.) Greene. During the winter of 1902-3 I found the network remains of the fruit of this plant, on the west side of Palmer's Run, near Port Richmond, and the following summer I collected herbarium specimens. Mr. Charles W. Leng had noticed the plant in the same locality, on the east side of the brook, in the

fall of 1902 Last summer the plant was more abundant than before, thus appearing to be spreading. It was found also along Charles Ave. in Port Richmond, where the seeds may have been introduced with some rubbish.

Aster Lowricanus Porter. Abundant on Richmond Hill, Ocean Terrace, and in the woods along Bradley Road. This was probably included with *A. cordifolius* L. in previous lists.

Aster Lowricanus Bicknellii Porter. Ocean Terrace, occasional, with the last.

Aster Novi-Belgii Atlanticus Burgess. This was found near Arlington Station in the woods along South Ave., only a short distance from typical *A. Novi-Belgii* L., which grew along the borders of the same piece of woodland,

Plantago halophila Bicknell. Mr. Wm. T. Davis and I found this species close to the shore near Huguenot. I collected specimens also in the marsh along Old Quarry Road. It is probably the most common plantain of our marshes.

Commelina Virginica L. Found growing along a small brook near Nicholas Avenue and Charles Avenue, Port Richmond.

Dryopteris spinulosa (Retz.) Kuntze. This occurs in swampy ground, especially near Bull's Head, New Springville, and south of Arlington Station.

Dryopteris spinulosa dilatata (Hoffm.) Underw. The specimen exhibited comes from the swamp along Willow Brook, south of Richmond Turnpike. In the vicinity of Bull's Head, in woods along Bradley Road, and along South Avenue, I have also found specimens which I

consider as belonging to this variety.

Dryopteris Pittsfordensis Slosson. Before reading Miss Slosson's account of this fern, I had labeled my specimens *D. marginalis* x *spinulosa*, and Miss Slosson considers it as a hybrid between *D. marginalis* and some form of *D. spinulosa*. On November 27th, 1904, Mr. Davis and I found, on a kind of a stone wall or embankment, near a brook in the vicinity of New Springville, a single plant of a fern which was at once recognized as something new. Some time later, when I received the Fern Bulletin for October, I read Mr. G. A. Woolson's account of a new fern from Pittsford Mills, Vt, similar to specimens collected two miles distant and described by Margaret Slosson in Rhodora, April, 1904. I surmised that our new fern might prove to be the same as Miss Slosson's, and after reading the account in Rhodora and comparing with the type specimen in the herbarium of the New York Botanical Garden, I have concluded that ours may pass under the same name as that from Pittsford, Vt.

It is interesting to note that both grew among stones and among numerous plants of *D. marginalis* and some plants of some form of *D. spinulosa*.

SPECIMENS EXHIBITED.

Mr. Jas. Chapin exhibited a living English goldfinch, captured at New Brighton, with crossed mandibles, which malformation had developed subsequent to its capture. It was necessary to clip the overlapping ends at intervals of a week or ten days in order to assist the bird in feeding readily.

PROCEEDINGS

OF

THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX, No. 14.

APRIL 15th, 1905.

The regular meeting of the Association was held at the residence of Mr. Chas. A. Ingalls, West New Brighton.

In the absence of the president Mr. D. L. Bardwell was elected chairman *pro tem*.

The Committee on Incorporation reported that the new act of incorporation had been introduced in both branches of the State Legislature; that it had passed the Senate and was on the calendar for final disposition in the Assembly.

The following were elected to active membership:

Thos. A. Fulton, New Brighton, and Charles Humphrey, New Brighton.

The following paper was read by Dr. Arthur Hollick:

STATEN ISLAND'S FIRST RESIDENT NATURALIST.

On pages 188-214, of volume ii, Transactions of the New York State Agricultural Society, for the year 1842, may be found a report, under the heading: "Agriculture of Richmond County. By Samuel Akerly, M. D., Oakland Farm, Southfield." Dr. Akerly was one of the original members of the New York Lyceum of Natural History, in 1817, and was a brother in-law of Dr. Samuel L. Mitchill, the first president of the Lyceum, and granduncle of our

fellow member Mr. William H. Mitchill. Dr. Akerly was corresponding secretary of the Lyceum in 1817 and second vice-president in 1819, but his name does not appear as that of an author of of any paper in any of the volumes of the Annals.

So far as I have been able to ascertain Dr. Akerly was the first naturalist to reside on Staten Island, and in the report above quoted there is evidence that he was interested in agriculture not only on its economic side but from the point of view of the scientific observer. His report begins with a description of the boundaries and extent of our island and then continues with statistics relating to population, employment, and extent and value of farm products. From this part of his report it is interesting to note that the total population of the Island was at that time about 11,000, of which 841 were employed in agriculture, 786 in trades and manufactures, 441 in navigating bays and rivers, 340 in commerce, 212 in navigating the ocean, 90 in "the learned professions and as engineers" and 35 in quarrying stone. About one sixth of the male population or about one thirteenth of the total, made a living by agriculture and it is stated that "of bread corn [wheat and rye], barley,

oats, potatoes and hay, a much larger quantity is produced than the consumption of the county requires, and the surplus is sold in the City of New York."

Under the sub-heading "Navigation and Fisheries" is given a list of the salt water fishes taken for food, and the abundance of oysters and clams in the surrounding waters is said to "tend to withdraw the attention of the inhabitants from the cultivation of the land."

The subject of "Meteorology" is treated at considerable length and under it are included discussions of the tides, winds, snow and thunder storms, etc.

The trees utilized for timber are listed as "several species of oaks, and walnuts, chestnut, beech, birch, dog-wood, white-wood [probably tulip tree], gum, etc." In this connection the author notes that "Staten Island was once celebrated for furnishing superior white oak for ship timber, but there is very little standing of large size." Also "Fencing materials are scarce on the island, both for posts and rails. * * * White cedar rails are now extensively used, and procured from the swamps in New Jersey about Egg Harbor, at about \$6 to \$8 per 100."

Under "Noxious Weeds" are mentioned the daisy [*Chrysanthemum Leucanthemum* L.], Johnswort [*Hypericum perforatum* L.], wild garlic [*Allium vineale* L.], burdock [*Arctium Lappa* L.], common dock [*Rumex crispus* L.], narrow and broad-leaved plantain [*Plantago major* L. and *P. lanceolata* L.], wild parsnip [*Pastinaca sativa* L.] and wild carrot [*Daucus Carota* L.].

Of special interest however is his chapter on the "Geology of Richmond County." After describing the features of the soapstone hills, the trap ridge, and the character of the soils, the continues as follows:

"Few or no minerals of any value have been found in the County. Near Rossville * * * some persons were

possessed with the idea of a coal mine * * * but upon examination it proved to be lignite, or wood carbonized by the decomposition of pyrites."

It may be remembered that at our meeting of December 12th, 1903, there was shown a mass of native copper, said to have been found in the moraine on Grymes Hill, but that it was a drift boulder was considered questionable or at least not proven. In this connection therefor the following paragraph in Mr. Akerly's report is of considerable significance:

"During the last war with Great Britain, while the forts at the Narrows were in process of erection, detached pieces of pure virgin copper were found in excavating the hill below Fort Richmond on this island. They were deep among the materials of the upland diluvium [morainal material], and were not accidentally dropped there, but must have been brought from the north."

His report finally ends with a, to us, quaint and elemental paragraph, to the effect that "the roll of the ocean has an action upon the stones and gravel, not only in wearing away their angles, but in reducing many of them to elliptical shapes. Some of these are so handsomely formed and polished by attrition on the sea shore, that the subscriber forwards herewith a few picked up on his water front. If the Society have no place for the display of such specimens, they may be deposited in the State Geological Cabinet at Albany, that geologists may study the action of water and the roll of the ocean upon stones." A footnote, on page 188, tells us that "accompanying this report were received an accurate original map of Richmond County, and some geological specimens, which will be disposed of according to the directions of Dr. Akerly, and for which he will please accept the thanks of the Society."

In the same Transactions, for the year 1843 (vol. iii. pp. 454-461), under

the heading "Staten Island. Supplement to the Agriculture of Richmond County," the author gives a further list of the fishes "taken in the spring and autumn of 1843, on the shore of Oak-land Farm, near the Great Kills," and another of the trees. Amongst the latter is listed the shad bush [*Amelanchier* sp.], "a white flowering shrub, that expands its blossoms before the forest trees are clothed with foliage, and indicates the approach of the fish from which it derives its common name." It is also of interest to note that in this list the butternut is included,—a tree which is now nearly extinct on the island.

A few brief paragraphs on "Geology" terminate this report, which consist of references to the granite outcrop near the old Tompkinsville landing and to Mr. Issachar Cozzen's "Geological History of Manhattan or New York Island," which was published in 1843. His final words are: "In the above-mentioned work, Mr. Cozzens states, that the green-sand formation of New Jersey, which contains the valuable marl there extensively employed as manure, underlays a portion of Staten Island and Long Island. It would be a great boon to the farmers of these islands, if, by digging wells or by any other means, they should strike into a bed of Jersey marl, which by analysis is known to contain a large proportion of potash, that gives it the fertilizing quality so conspicuous in Monmouth county in that State."

Dr. Akerly was a type of the old time "naturalist," who was interested in all branches of natural history,—a type of the scientific man which in this era of specialization is almost unknown. It is unfortunate that the records of his observations are so comparatively meagre, as there is no doubt that he could have noted many other facts in regard to our local fauna and flora then in

existence which are unrecorded and forgotten.

The following paper was read by Mr. Alanson Skinner:

AN ATTEMPT AT THE TRANSLATION OF SOME STATEN ISLAND INDIAN NAMES.

According to Clute's History of Staten Island, and the later works by Bayles and Morris, one of the indian names for Staten Island was given as "Aquehonga," and the Rev. Wm. Beauchamp is said to have translated it as meaning "High Sandy Banks." Schoolcraft gives "Aquehonga Manacknong" as "The Place of Bad Woods."

Some years ago, Dr. James Hammond Trumbull complied from the famous indian bible of the "Apostle Elliot," a dictionary of the Natick-Algonkin dialect, which is, or rather was, very closely related to the tongue used by our own aboriginal inhabitants. In fact all the Algonkin dialects are closely akin, and are easily understood by tribes of the same stock from widely different localities.

Dr. Hale, in his introduction to Trumbull's dictionary, says; "In the spring of 1899 I placed before a Chippewa boy in the Hampton (Virginia) School, thirty words of the Massachusetts indian language. He recognized at once fifteen of them, giving them their full meanings, and with a little study made out the remainder. In the course of two-and-a-half centuries the uses of words differ among Indians as among white men, but it would seem that they do not differ more."

As our early settlers did not bother themselves to any great extent with the pronunciation or spelling of indian words and names it would very likely happen that many of those handed down to us would not be in all cases correct, so it is fair to infer that the name "Aquehonga" has undergone some slight modification after this fashion.

In Trumbull's dictionary the word "Ahquedne" is given as meaning an island, and, as is well known, the local Algonkin place-termination is "ock," so that, by joining the two words together we have the word "Ahquedne-ock," the "Place of the Island." certainly not an inappropriate term for this locality, if our surmise is correct.

It is interesting to those who claim that the name of the locality known as "Watchogue" is of indian origin, and not as the inhabitants of modern days would have us believe, a misspelled English nick-name, that Mr. Wm. Wallace Tooker, in a recent number of the "*Journal of American Folk Lore*," in an article dealing with some of the indian names for mountains and hills in New England, states that the name "Wochogue," is a frequent one on Long Island for a slightly hilly region in an otherwise level country. In the Natick dictionary the kindred word "Wadchuemes," is given as, "a hill," and "Wadchuwemesash" as "little hills." Watchogue is, as we all know a "country of little hills" and sand-dunes, so we think that for the present at least the name should be regarded as of indian origin.

The secretary read the following reviews of

RECENT LITERATURE RELATING TO STATEN ISLAND.

I. *The Occurrence and Origin of Amber in the Eastern United States.* Arthur Hollick. *American Naturalist*, Vol. xxxix (Mch., 1905), pp. 137-145, pls. i-iii.

This paper includes an account of the discovery of amber at Kreischerville, first recorded in our Proceedings for November 12th, 1904, together with a description of the clay beds and of the specimens found there. Following this is an account of previous records of the occurrence of amber in the eastern United States and a discussion regarding the probable origin of the amber. In

the latter connection the author notes that specimens found at Cape Sable, Maryland, were proven to have been derived from an extinct species of *Sequoia*, - the genus to which the giant trees of California belong, - and that at Kreischerville, in close association with the amber, are twigs and leaves of *S. heterophylla* Vel. and *S. Reichenbachii* (Gein.) Heer, as mentioned in our Proceedings of January 21st, 1905.

The illustrations include an extended view of the section exposed in the Androvette pit, showing the Cretaceous clays and sands below and the more recent sands and gravels lying unconformably over them; a closer view of the particular part of the section in which the amber was found; and a plate of figures, showing the sizes and characteristic shapes of thirty-four selected specimens.

II. *A Recent Discovery of Amber on Staten Island.* Arthur Hollick. *Journal of the New York Botanical Garden*, Vol. vi (Mch., 1905), pp. 45-48, figs. 14, 15.

This is a briefer article than the one previously noticed, dealing with the same subject, and including, in part, the same illustrations. In fig. 14 the amber bed in the Androvette pit is shown, with the genial superintendent, Mr. John M. Dunigan, posing as a standard of comparison for the height of the section containing the bed. Fig. 15 includes six representations of amber specimens, which are somewhat better pictures than those of the same specimens on Plate iii of the *American Naturalist*, previously noted.

III. *Small Deposits of Amber found on Staten Island.* Brooklyn Daily Eagle, Sunday, April 2d, 1905.

This is quite a lengthy account of the occurrence and uses of amber, preceded by a reference to the recent discovery of amber at Kreischerville, apparently based upon the notices which have appeared in our Proceedings or in the

publications above mentioned. By some means the information is made to appear as if obtained from the U. S. Geological Survey at Washington.

SPECIMENS EXHIBITED.

Mr. Wm. T. Davis exhibited the following objects: branch of a tree and a cocoon, showing the work of woodpeckers in their search for larvae. Where cocoons are suspended on slender branches the birds have considerable difficulty in opening them, on account of the swaying and consequent lack of resistance to the impact of blows; shoots of wild cherry, dogwood, apple and benzoin, from the vicinity of Moravian Cemetery, girdled by rabbits during the past winter, indicating that the animals were hard pressed for food; twigs of an apple tree, covered with the San José scale (*Aspidiotus perniciosus*

Comst.), and, for comparison, a lilac twig with some of the common scale insects attached; a piece of soapstone from an outcrop in Simonson's brook, near Richmond Hill, representing an exposure further to the westward than any previously recorded on the island.

Mr. L. W. Freeman presented two jasper arrow points, apparently rejects, found at Mariners' Harbor.

Mr. Chas P. Benedict exhibited a collection of silicified wood, and sand concretions, from Southern Pines, N. Carolina and a skull of a rattlesnake, with the poison fangs attached, from Palm Beach, Florida. Also section of of a wooden water main, in use in New York City until about 1835, and recently unearthed. The wood is remarkably well preserved.

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX. No. 15.

MAY 20th, 1905.

The regular meeting of the Association was held at the residence of Mr. Lester W. Clark, New Brighton, with the president in the chair.

In the absence of the secretary Mr. Charles A. Ingalls was elected secretary *pro tem*.

Mr. Montague Lessler, for the Committee on Incorporation, reported that the act incorporating the Staten Island Association of Arts and Sciences had passed both branches of the State Legislature; had received the approval of the Mayor; was signed by the Governor yesterday (May 19th) and is now Chapter 526 of the Laws of 1905.

The president outlined the work of the committee from the date of its appointment, at the meeting of January 21st, and suggested that a vote of thanks be tendered to the committee, for record in the minutes of the Association.

Mr. Edward P. Doyle offered the following, which was unanimously adopted:

Resolved: that the thanks of this Association be and they are hereby tendered to the Committee on Incorporation, especially to Mr. Montague Lessler, for the care and wisdom displayed in the drafting of the Act of Incorporation of the Staten Island Association of Arts and Sciences, and for the time and attention subsequently given to it, which resulted in prompt and favorable

action by the Legislature and approval by the Mayor and Governor.

A formal vote of thanks was also tendered Assemblyman Arnold J. B. Wedemeyer and Senator Carl S. Burr for their prompt and efficient work in behalf of the act.

Mr. Lessler suggested that a Committee on Constitution and By-Laws should be appointed, in order that the new corporation might be in a position to discuss and adopt them and effect a permanent organization at the earliest possible date.

On motion the president appointed Mr. Lessler and Dr. Arthur Hollick as such committee.

Mr. Wm. A. Shortt urged an early compliance with the provisions of section 6 of the act of incorporation and offered the following, which was unanimously adopted:

Resolved: that a special meeting of the Natural Science Association of Staten Island be called for Saturday evening, June 3rd, 1905, at the Staten Island Academy, for the purpose of taking action under Section 6 of Chapter 526 of the Laws of 1905, incorporating the Staten Island Association of Arts and Sciences, and that the secretary include in the call for the meeting, the following resolution:

Resolved: that the Board of Trustees of this Association be and they are hereby authorized to assign and convey

to the Staten Island Association of Arts and Sciences all the property, real and personal, owned and held by this Association.

On motion the Committee on Incorporation was authorized and requested to prepare in advance all necessary papers and forms of resolutions necessary to carry out the intent and purpose of the special meeting.

The following were elected to active membership:

Rev. Arthur H. Allen, Tompkinsville and Mr. John Martin, Stapleton.

NOTES AND MEMORANDA.

The following note from Dr. Arthur Hollick was read:

At our last meeting Mr. Charles P. Benedict exhibited a section of an old wooden water main, in use in New York City until 1835. I was curious to know what kind of wood had been utilized for the purpose and transmitted a piece to Professor E. C. Jeffrey, of Harvard University, who kindly determined it for me. It proves to be white pine (*Pinus Strobus* L.),—a tree which is not now very plentiful in this vicinity, although formerly quite abundant.

Mr. Wm A Shortt described, by means of a series of carefully executed sketches, his observations on the successful co-operative efforts of several ants engaged in the task of dragging the body of a caterpillar over various obstacles.

SPECIMENS EXHIBITED.

Mr. James Chapin exhibited four mounted specimens of the American goldfinch [*Astragalinus tristis* (Linn.)], to illustrate the male moult. They were obtained respectively on November 6th, 1904, April 8th, 1905, April 22nd, 1905 and May 18th, 1905. The first was in winter plumage and the last in full breeding plumage.

Mr. Alanson Skinner exhibited a collection of arrow points, arranged on cotton batting, in a shallow glass-covered case, in order to illustrate this method of displaying them. The specimens were held in place on the cotton by the pressure of the glass cover and withstood considerable handling and shaking without becoming displaced.

PROCEEDINGS OF THE NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

VOL. IX. No. 16.

JUNE 3rd, 1905.

A special meeting of the Association was held at the Staten Island Academy, pursuant to the following notice, twenty-four members being present:

NATURAL SCIENCE ASSOCIATION OF STATEN ISLAND.

Please take notice that a special meeting of the Natural Science Association of Staten Island will be held at the Staten Island Academy, New Brighton, N. Y., on Saturday the 3rd day of June, 1905, at 8.30 o'clock in the evening, for the purpose of acting on the following resolution:

Resolved: That the Board of Trustees of this Association be and they are hereby authorized to assign and convey to the Staten Island Association of Arts and Sciences all the property, real and personal, owned and held by this Association.

ARTHUR HOLLICK, Secretary.

The president called the meeting to order and explained the object of the resolution included in the call for the meeting.

The resolution was then put and carried unanimously.

Mr. Edward C. Delavan moved the following resolutions:

Resolved: That all the property of the Natural Science Association of

Staten Island be assigned to the Staten Island Association of Arts and Sciences.

Resolved: That a suitable deed of assignment be prepared, expressing a nominal consideration, and that the same be executed by the President and Board of Trustees, in the name of the said Association and the said Board of Trustees, and properly acknowledged.

Resolved: That the said deed and all the property thereby assigned be delivered to the Staten Island Association of Arts and Sciences by the President of the Natural Science Association of Staten Island.

The resolutions were discussed and after discussion were unanimously adopted.

On motion the Association then adjourned *sine die*.

The Board of Trustees met immediately after the adjournment of the special meeting of the Association, with the president in the chair.

Voted: That the President sign his name and affix his personal seal to the deed of assignment from the Natural Science Association of Staten Island and its Board of Trustees to the Staten Island Association of Arts and Sciences of all the assignor's property, and duly acknowledge the same, pursuant to a resolution of the said grantor Association.

On motion the Board then adjourned to the call of the President.

DIGEST OF THE LIBRARY REGULATIONS.

No book shall be taken from the Library without the record of the Librarian.

No person shall be allowed to retain more than five volumes at any one time, unless by special vote of the Council.

Books may be kept out one calendar month; no longer without renewal, and renewal may not be granted more than twice.

A fine of five cents per day incurred for every volume not returned within the time specified by the rules.

The Librarian may demand the return of a book after the expiration of ten days from the date of borrowing.

Certain books, so designated, cannot be taken from the Library without special permission.

All books must be returned at least two weeks previous to the Annual Meeting.

Persons are responsible for all injury or loss of books charged to their name.

